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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*On the Natural Constants of the Urine of Man.* By the REV. SAMUEL HAUGHTON, F. R. S., Fellow of Trinity College, Dublin.

(*Continued from* vol. xxviii. p. 17.)

PART IV.—*Comparison of the foregoing with the daily work, bodily and mental, and with the daily food of Man.*

BEFORE deducing any inferences from the excretion of urea, uric acid, and phosphoric acid, established in the three preceding parts of this paper, a preliminary inquiry suggests itself, which, if decided in the negative, would go far to render any inferences deduced from the urine of but secondary value.

I take for granted that the substances excreted by the urine of a healthy man result from the wear and tear of tissue of every kind in the body; and that, in a state of health, this excretion is exactly compensated for by the assimilation of an equal amount of the same substances ingested.

This hypothesis would be readily granted, if it included all the *excreta*—per cutem, per halitum, per anum, per vesicam, provided the *ingesta* also included all received by the stomach, lungs (and skin?)—but, in restricting my hypothesis to the

urine, I was aware that I differed from many physiologists, and that the *onus probandi* rested upon me. I, accordingly, undertook a number of observations on the food taken by the persons experimented on in the preceding part of this paper, particularly with reference to the nitrogen received in their food compared with the nitrogen excreted by the urine. The results of these observations I shall now detail, previously to deducing any inferences from the excretions of the urine. I determined the water lost by drying each article of food at 212° F., and afterwards analyzed the dried product for nitrogen, by burning in a tube with soda lime, and collecting the ammonia in muriatic acid. The quantity of nitrogen was found by adding bichloride of platinum, and afterwards weighing the double chloride of platinum and ammonium on a weighed filter; or by the weight of platinum after ignition; or by both methods. I always found, when the ignition of the double chloride was conducted slowly, that the results were identical with those given by the direct weighing of the ammoniaco-platino-chloride.

Experiments on Food.

1. *Lean roasted Mutton;* leg; 5 days dead before cooking, 2 days cooked—
   114 grs., dried at 212° F., gave 48·10 grs.
   Solids = 48·19 per cent.
2. *Lean roasted Mutton;* leg, nearer the shank end; more fat and fascia than in No. 1; 5 days killed, 1 day cooked—
   89 grs., dried at 212°, gave 28·10 grs.
   18·10 grs. of the latter, burned with soda lime, gave of platinum 12·70 grs.
   Solids = 31·57 per cent.
   Nitrogen = 10·02 „
3. *Lean roasted Mutton;* leg, nearer the loin; very little fat or fascia; 5 days killed, 1 day cooked.
   123·75 grs., dried at 212° F., gave 62·80 grs.
   13·30 grs. of the latter, burned in tube, gave of platinum 11·70 grs.
   Solids = 50·75 per cent.
   Nitrogen = 12·56 „
4. *Lean raw Mutton;* loin; 5 days killed.
   118·75 grs., dried at 212° F., gave 38·90 grs.
   14·65 grs. of the latter gave of platinum 11·53 grs.
   Solids = 32·76 per cent.
   Nitrogen = 11·21 „

5. *Lean roasted Beef;* sirloin; 5 days killed, 1 day roasted.
98·12 grs., dried at 212° F., gave 37·45 grs.
14·97 grs. of the latter gave of am. plat. chloride, 30·15 grs.
Solids = 38·16 per cent.
Nitrogen = 12·64 „

6. *Lean raw Beef;* sirloin; 7 days killed.
164·93 grs., dried at 212° F., gave 50·75 grs.
13·80 grs. of the latter gave of am. plat. chloride, 28·13 grs.
Solids = 30·77 per cent.
Nitrogen = 12·80 „

[The following experiments are useful, as showing the proportion of the water and fat of lean beef and mutton lost by roasting.

A. *Lean raw Beef;* lap; 5 days killed, weighing 2339 grs. became by roasting (1 day cold) 1573·75 grs., and on the second day 1551·45 grs.
Roasted solids (1st day) = 67·28 per cent.
„ (2nd day) = 66·33 „

B. *Lean raw Mutton;* loin; 5 days killed, and weighing 2287·3 grs., became by roasting (one day cold) 1368·3 grs., and on second day 1345·0 grs.
Roasted solids (1st day) = 59·82 per cent.
„ (2nd day) = 51·83 „]

7. *Best white Bread;* 2 days old; white wheat.
106 grs., dried at 212° F., gave 65·20 grs.
20·90 grs. of the latter gave of platinum 3·10 grs.
Solids = 61·51 per cent.
Nitrogen = 2·12 „

8. *Prison white Bread;* second quality, probably made from red wheat; 2 days old.
52·25 grs., dried at 212°, gave 32·05 grs.
18·10 grs. of the latter gave of am. plat. chloride, 6·40 grs., and of platinum 2·80 grs.
Solids = 61·34 per cent.
Nitrogen = 2·21 „

9. *Prison Oatmeal.*
94·01 grs., dried at 212° F., gave 86·53 grs.
16·85 grs. of the latter gave of am. plat. chloride 7·30 grs., and of platinum 3·30 grs.
Solids = 92·03 per cent.
Nitrogen = 3·04 „

10. *Prison Indian Meal.*
96·22 grs., dried at 212° F., gave 82·55 grs.
15·07 grs. of the latter gave of platinum 1·65 grs.
Solids = 85·20 per cent.
Nitrogen = 1·56 „

11. *Boiled Cauliflower;* 1 day cooked.
203·18 grs., dried at 212° F., gave 22·25 grs.
20·33 grs. of the latter gave of am. plat. chloride 11·40 grs.
Solids = 10·95 per cent.
Nitrogen = 3·50 „

12. *Prison Milk.* Dr. Apjohn favoured me with the results of his own experiments, made by direct analysis on two specimens of the milk supplied usually to the Dublin market, and on a specimen procured direct from the cow. From these carefully conducted experiments it would appear that, if the adulteration of milk be merely water, the specific gravity affords a direct measure of the nitrogen present. The nitrogen was determined by him in the same manner as by myself, viz., by the corresponding weight of platinum procured.

No. 1, Sp. gr. 1025; Platinum per 1000 grs. 21·80 grs.
No. 2, „ 1027; „ 23·62 „
No. 3 (pure) „ 1035; „ 32·48 „

The prison milk examined by me had a specific gravity of 1024·9, and also contained 177 grs. (equivalent to glucose) of sugar per pint.

Collecting together the preceding data, the following Tables may be constructed, showing respectively the quantity of water and of nitrogen in the several articles of food experimented upon.

Table J.—*Quantity of Water and Solid Matter in Articles of Food.*

No.	Food.	Solids per cent.	Water per cent.
1.	Mutton (roast), . .	42·19	57.81
„	„ „	31·57	68·43
„	„ „	50·75	49·25
2.	Mutton (raw), . . .	32·76	67·24
3.	Beef (roast), . . .	38·16	61·84
4.	Beef (raw), ...	30·77	69·23
5.	Bread (1st quality), .	61·51	38·49
6.	Bread (2nd quality) .	61·34	38·66
7.	Oatmeal, ...	92·03	7·97
8.	Indian Meal, . . .	85·20	14·80
9.	Cauliflower, . . .	10·95	89·05

The following remarks may be made on this Table:—

The per-centage of water in roast mutton varies much more than it does in roast beef, probably on account of the more va-

riable proportion of fat distributed in the cellular matter between the muscular fibres.

The average of the three specimens of roast mutton [solids, 41·50 per cent.; water, 58·50] comes very near that found for roast beef.

The close agreement between the two specimens of bread is what might be expected from the facts recorded by chemists respecting the "water of panification."

Table K.—*Per-centage of Nitrogen found in Articles of Food, previously dried at* 212° F. (except the milk).

No.	Food.	Nitrogen per cent.	No.	Food.	Nitrogen per cent.
1.	Mutton (roast), .	10·02	7.	Bread (2nd quality),	2·21
2.	„ „	12·56	8.	Oatmeal, . . .	3·04
3.	Mutton (raw), . .	11·21	9.	Indian Meal, . .	1·56
4.	Beef (roast), . .	12 64	10.	Cauliflower, . .	3·50
					per 1000 gr.
5.	Beef (raw), . . .	12·80	11.	Milk (sp. gr. 1035),	4·64
6.	Bread (1st quality),	2·12	12.	Milk (sp. gr. 1025),	3·11

The specimens of mutton (Nos. 1, 2) gave of solids 31·57 and 50·75 per cent., respectively; from which, and other similar facts, I infer that the mutton that contains least water and fat is not only the best for that reason, but that also its muscular fibre contains more nitrogen when dried. The poor fatty mutton, 2 or $2\frac{1}{2}$ years old, with pale muscle, that abounds in the Dublin markets, is the result of our so-called improved breeding of sheep, possessed of high fattening qualities, but is very inferior to the dark-fibred 3 or $3\frac{1}{2}$ year old mutton, now, alas! almost extinct; this inferiority depends on a double cause, the excess of water, and the deficiency of nitrogen. The difference in the nitrogen contained in the two qualities of bread, though slight, is, I believe, real, as it is probable that there is a greater quantity of gluten in our red than in our white wheats.

It is now necessary, by the aid of the preceding Tables, to calculate the quantity of nitrogen, or of its equivalent urea, taken as food by the subjects of Tables A and B: I am able to do so in the case of No. 1 of Table A, and of Nos. 2, 3, 4, 5, of Table B. The food used daily by No. 1, Table A, during some time preceding, and during the experiments, was as follows:—

I. Roast beef (cold), . . 8 oz.
II. White bread, . . . 8 oz.
III. Boiled cauliflowers, . 10 oz.
IV. Milk (sp. gr. 1025), . 1 pint.

By the aid of the chain rule, which is admirably adapted to such calculations, I find the equivalent of these four articles of diet in grains of urea, as follows:—

I.

8 oz. cold roast beef.
16 — 7000 grs. „ „
10000 — 3816 grs. dried at 212°.
10000 — 1264 grs. nitrogen.
28 — 60 grs. urea.

362 grs.

II.

8 oz. white bread.
16 — 7000 grs. „
10000 — 6151 grs. dried at 212°.
10000 — 212 grs. nitrogen.
28 — 60 grs. urea.

98 grs.

III.

10 oz. boiled cauliflower.
16 — 7000 grs. „
10000 — 1095 grs. at 212° F.
1000 — 35 grs. nitrogen.
28 — 60 grs. urea.

36 grs.

IV.

1 pint milk.
8 — 70000 grs.
10000 — 218 grs. platinum.
98 — 14 grs. nitrogen.
28 — 60 grs. urea.

58 grs.

Adding together the preceding results, we find—

I. Cold roast beef, 8 oz., equivalent to 362 grs. urea.
II. White bread, 8 oz., „ 98 „ „
III. Boiled cauliflower, 10 oz., 36 „ „
IV. One pint of milk, „ 58 „ „

Total equivalent of urea ingested, **554** grs.

Let us now compare this quantity of urea with that excreted *per vesicam* and *per anum*.

The fæces passed per day amounted to 5 oz., the analysis of which gave the following results:—

305·45 grs., dried at 212° F., gave 80·05 grs.

28·15 grs. of the latter gave of am. plat. chloride, 30·75 grs.

From these data I find—

Solids = 26·21 per cent.
Nitrogen = 6·86 „

From this we obtain the total urea equivalent to the nitrogen thus excreted.

5 oz. fæces.
16 — 7000 grs.
10000 — 2621 grs. at 212° F.
10000 — 686 grs. nitrogen.
28 — 60 grs. urea.

84·28 grs.

Combining this result with that given in Table A, we find—

1. Urea, excreted *per vesicam* = 465·09 grs.
2. Equivalent of urea, excreted *per anum*, . . = 84·28 grs.

Total, ... **549·37**

The close agreement of this result with that obtained from an analysis of the food entitles me to assume that the nitrogen used in the body is naturally excreted by the kidneys, and that the surplus taken in food, and not used or required by the body is thrown out as a mere excretion *per anum*.

I am aware that this result differs widely from the statements made in Carpenter's Physiology, and other books, on the authority of Barral and other experimenters, who divide the nitrogen excreted from the body into two nearly equal portions, one of which is discharged *per vesicam et anum*, and the other *per cutem et halitum*.

M. Barral's results are as follow:—

Subject.	Nitrogen in food.	Nitrogen excreted.		
		Per vesicam.	Per anum.	Per cutem et halitum.
M. Barral, æt. 29, in summer wt. 105 lbs.	432·3 grs.	168·3 grs.	42·2 grs.	220·8 grs.
M. Barral, in winter,	327·3 ,,	151·3 ,,	20·1 ,,	155·9 ,,
Boy (æt. 6, wt. 33 lbs.)	121·9 ,,	47·8 ,,	27·8 ,,	46·3 ,,
Man (æt. 59, weight, 129 lbs., ...	421·5 ,,	234·6 ,,	38·6 ,,	148·3 ,,
Unmarried Woman, æt. 32, wt. 135 lbs.,	345·8 ,,	154·4 ,,	12·3 ,,	179·1 ,,

I believe that the results of this Table are in error, both by underrating the nitrogen passed in the urine, a mistake commonly committed in estimating urea, and also by overrating

the nitrogen taken in food, as I certainly find some difficulty in understanding how M. Barral, only weighing 105 lbs., could possibly consume the equivalent of 926 grs. of urea per day. If any doubt rest on the actual facts as to the nitrogen in the food and urine, of course the result as to the skin and lungs becomes worthless, as it is found simply by difference. I now turn to the case of Nos. 2, 3, 4, 5, of Table B, for which I have accurate analyses of the food and urine, but not of the fæces.

These subjects of experiment, being prisoners in the Military Prison in Dublin, of course could have no access to any food except that allowed by the regulations. I am indebted to my friend, Mr. Tufnell, to whom I take this opportunity of acknowledging my obligations, for the facilities which I experienced in making my observations on this class of subjects.

The food allowed by the prison regulations is the following:—

I.	Oatmeal, . . .	8 oz.
II.	Indian Meal, . .	9 oz.
III.	Bread, ...	8 oz.
IV.	Milk, ...	1½ pints.

The preceding quantities of food, converted, as before, into their equivalents of urea, give the following results:—

I.

	8 oz. oatmeal.
16	7000 grs. ,,
10000	9203 grs. at 212° F.
10000	304 grs. nitrogen.
28	60 grs. urea.

210·5 grs.

II.

	9 oz. Indian meal.
16	7000 grs. ,,
1000	852 grs. at 212° F.
10000	156 grs. nitrogen.
28	60 grs. urea.

112 grs.

III.

	8 oz. prison bread.
16	7000 grs. ,,
10000	6134 grs. at 212° F.
10000	221 grs. nitrogen.
28	60 grs. urea.

101·6 grs.

The milk used in the prison had a specific gravity of 1024·9, and contained 177 grs. of sugar equivalent to glucose per pint. I therefore adopt for it the same result as that before used, viz., one pint equivalent to 58 grs. of urea.

Combining the preceding results, I find the total food used per day to be equivalent to the following quantity of urea:—

I.	Oatmeal, 8 oz., . .	210·5 grs. urea.
II.	Indian meal, 9 oz., .	112·0 „ „
III.	Bread, 8 oz., . . .	101·6 „ „
IV.	Milk, 1½ pints, . .	87·0 „ „
	Total, . . .	**511·1** grs. urea.

From Table B, it appears that the excreta, estimated as urea, were as follows:—

I.	Excreta *per vesicam*, .	400·62 grs. urea.
II.	Excreta *aliter*, . . .	110·48 „ „
	Total, . . .	511·10

I have no doubt but that the 110 grs., equivalent to 51·6 grs. of nitrogen, were discharged as surplus *per anum*, and that the lungs and skin had nothing to do with their elimination.

Having re-established the fact, that the kidneys are the sole excreting organ intended to be used in health for the elimination of nitrogen from the body, and that the nitrogen so excreted has done its work, it remains for me to show the connexion between the work done and the nitrogen so excreted.

I have already divided the work done into four different heads:—

a. Opus vitale.
b. Opus calorificum.
c. Opus mechanicum.
d. Opus mentale.

Of these, the first two, properly speaking, ought to be considered together, as they are both necessary to the life and health of the individual; but as the second is fully accounted for by the excretion of carbonic acid from the lungs, and in no way relates to the present subject, I shall omit its consideration for the present, and confine myself to the three other descriptions of work. Before doing so, it is necessary to estimate, in the usual manner, the amount of mechanical work done, and then to determine the number of grains of urea to which it is equivalent.

Let us turn first to Table B.

The habits of the subjects of experiment are as follows:—

No. 1, wt. 173 lbs., walks 3 miles per day.
No. 2, 3, 4, 5. Average weight 141 lbs.

1. Shot drill, . . . 3 hours.
2. Ordinary drill, . 1¼ hours.
3. Oakum-picking, . 3½ hours.

1. To estimate the work done by a person of a given weight walking, it is only necessary to remember that the effort of walking is equivalent to that of lifting one-twentieth part of the weight of the body through the distance walked; this fact I have established by many observations. We therefore obtain the following formula—

$$\left.\begin{array}{l}\text{Work done in walking estimated in tons}\\ \text{lifted through a foot,}\end{array}\right\} = \frac{5280 \times w \times n}{20 \times 2240} \qquad (4)$$

w and n denoting the weight in lbs., and the distance walked in miles.

2. The work done in shot drill is somewhat more difficult of estimation. From careful observation of the prisoners engaged in this highly uninteresting occupation, I obtained the following results:—

Each man lifts a 32 lb. shot to his breast (3 ft.) from a tressel, carries it through 9 ft. by measurement (4 paces by drill); and lays it down on a similar support; he then returns unloaded, and takes up another shot, and so repeats the double journey; of course, after a certain time, all the 32 lb. shots are transferred from one side to the other of the working gang, and they must then reverse the order of proceeding, and carry back the shots. Six of these double journeys occupy one minute.

Now, as it can be proved that equal work is done in lifting and laying down the shot, we readily obtain the following expression for the work done in the three hours—

$$\text{Work in tons} = \left(\frac{(2w + 32)\,a}{20 \times 2240} + \frac{32 + 2h}{2240}\right) \times n \times 180^m, \qquad (5)$$

where

w = weight of man in pounds.
a = distance in feet to which the 32 lb. shot is carried.
h = height in feet to which it is lifted.
n = number of double journeys per minute.

Substituting for these their values, we find—

Work of three hours' shot drill in tons lifted through one foot

$$= \left(\frac{(282\,\text{lbs.} + 32\,\text{lbs.})\,9\,\text{ft.}}{20 \times 2240} + \frac{32\,\text{lbs.} \times 6\,\text{ft.}}{2240}\right) \times 6 \times 180 = \mathbf{160{\cdot}7}\ \text{tons.}$$

3. *Oakum-picking.*—If we estimate the mechanical labour of this occupation as less than half that of walking, it will be safe to consider $3\frac{1}{2}$ hours of oakum-picking as equivalent to 5 miles' walking; this estimate I adopt for the present.

From the preceding considerations, the following estimate of the work done in actual mechanical labour by the subjects of experiment of Table B is easily deduced.

No. 1. Work done in walking = 61·1 tons lifted through one foot.

This result is obtained from equation (4).

Nos. 2, 3, 4, 5. (I assume common drill to be the same labour as walking.)

Work done:—

1. Shot drill, ...	160·7	tons lifted one foot.
2. Common drill (4 miles),	66·5	„ „
3. Oakum-picking (5 miles),	83·1	„ „
	310·3	

All the subjects of Table B may be considered as simply expending force in the act of living, and in working or walking about. From these considerations, I find the following equations:—

$$\begin{aligned} 400 &= Aw + B. \\ 367 &= Aw' + B'. \end{aligned} \qquad (6)$$

In these equations,

400 grs. of urea represent the total work of the Military Prisoners, Nos. 2, 3, 4, 5.

367 grs. of urea represent the total work of No. 1.

w, w', are the weights of the subjects respectively, viz., 141 lbs. and 173 lbs., referred to 150 lbs., as the weight of the standard man.

A denotes the daily discharge of urea in grains requisite to keep the standard man (150 lbs.) alive.

B, B', denote the urea in grains that are equivalent to the mechanical work done by Nos. 2, 3, 4, 5, and No. 1, respectively.

From the estimate of the work already given, we obtain the following additional equation—

$$61\ B = 310\ B'. \qquad (7)$$

Combining equations (6) and (7), we find—

$$\begin{aligned} 400 \times 150 &= A \times 141 + B. \\ 367 \times 150 &= A \times 173 + B'. \\ 61\ B &= 310\ B'. \end{aligned} \qquad (8)$$

Solving for A,

$$A = \frac{310 \times 367 - 61 \times 400}{310 \times 173 - 61 \times 141} \times 150$$

$$= \mathbf{297{\cdot}7} \text{ grs. urea.}$$

This is the excretion of urea requisite to keep 150 lbs. wt. of man alive for four and twenty hours.

In round numbers, it may be called 300 grs.; from which it follows that each pound weight of living man requires an expenditure of work, represented by 2 grs. of urea, per day to keep it alive, and prevent it from becoming subject to the ordinary chemical laws of inert matter.

Substituting in equations (8) for A its value just found, we obtain—

$$400 = 297{\cdot}7 \times \frac{141}{150} + B,$$

$$367{\cdot}5 = 297{\cdot}7 \times \frac{173}{150} + B'.$$

From which it is easy to deduce

$$B = 120 \text{ grs.}$$
$$B' = 24{\cdot}2 \text{ grs.}$$

These numbers express the grains of urea, equivalent to the mechanical work done by Nos. 2, 3, &c., and No. 1, respectively; but the work done is 61 and 310 tons lifted through one foot, respectively; from which it is easy to calculate β, the number of grains of urea requisite to lift 100 tons through one foot, viz.:—

$$\beta = \frac{120 \times 100}{310} = 38{\cdot}71 \text{ grs.},$$

and

$$\beta = \frac{24{\cdot}2 \times 100}{61} = 38{\cdot}67 \text{ grs.}$$

Taking the mean of which, I find—

$$\beta = \mathbf{38{\cdot}69} \text{ grs. of urea.}$$

I have already found that it requires 297·7 grs. of urea to keep 150 lbs. of man alive for 24 hours; the actual value of this vital work may now be calculated, by dividing 297·7 by β, the coefficient in urea of mechanical work—

$$\text{Opus vitale} = \frac{297{\cdot}7 \times 100 \text{ tons}}{38{\cdot}69} = 769{\cdot}45 \text{ tons lifted one foot.}$$

This enormous force is requisite to keep 150 lbs. of man living during 24 hours, and yet it is not all that is required; for, in addition, there is the *Opus calorificum*, or work necessary to keep the skin at a constant temperature of 90° F. The amount of this latter work will vary with climate and season, and appears to depend altogether on the excretion of carbonic acid, and not on that of urea.

No chemist who reflects on the number and power of the chemical affinities that are controlled and kept from acting by the vital force during life, will feel disposed to question the enormous energy which my results tend to attribute to it.

Let us examine these results from another point of view. I have estimated the work done by the prisoners at 310 tons lifted one foot. This is a large amount of work, perhaps as large as can ever be obtained in forced labour, but it falls below what is observed in free labour. I take as an example the paviours, Welsh and Irish, employed in this city, on whom I made careful observations last October, and found the following results:—

Weight of rammer, . . .	5 st. 9 lbs.
Blows of rammer, ...	78 in 2^m 45^s.
Rest, ...	3^m 30^s.
Height lifted, ...	16 in.
Hours of labour, ...	10 hours.

From these data, it is easy to calculate that the work is equivalent to 352 tons lifted one foot per day; to which must be added the work done in walking to and from the work, and while at work; this is equivalent to one-twentieth of the distance walked, multiplied by the weight of the labourer. The whole mechanical work is, in all probability, less than 400 tons lifted one foot per day. According to the observations of Coulomb, Lamandé, and others, French workmen are not usually capable of this amount of labour, although it is sometimes approached. I select the following instances:—

1. Coulomb estimates the work done per day in pile-driving at 75240 kilogram-metres = 242 tons lifted one foot.

2. Lamandé found the work done in pile-driving, at the building of the bridge of Jena, to be

80635 kilogram-metres = 260 tons lifted one foot.

3. Coulomb determined the daily work of men employed turning a lever at 115920 kilogram-metres

= 374 tons lifted one foot.

4. Coulomb found, on questioning a number of pedlars, that they stated that on an average they carried 44 kilos, 19,000 metres per day. Supposing each pedlar to weigh 55 kilos, this would give 1881000 kilogram-metres horizontally. The one-twentieth part of this is the weight lifted

= 94050 kilogram-metres.

= 303 tons lifted one foot.

The low amount of work done in the case of pile-driving

appears to be partly due to the rapid character of the work, and its consequent exhausting effect.

Let us take the work done by the paviours as the average work of well-fed and well-paid labourers, working freely; and, supposing each man to weigh 150 lbs., and calculate how high this work would lift his body in the 24 hours. We find, calling x this height in miles—

$$\frac{x \times 150 \text{ lbs.}}{2240} = \frac{352 \text{ tons}}{5280 \text{ ft.}};$$

or,

$$x = 1{\cdot}005 \text{ miles.}$$

This result is confirmed by the consideration that 20 or 21 miles per day, with rest on Sundays, is the utmost that a skilled pedestrian would undertake as a constant performance, carrying no weights except his clothes. Since the coefficient of traction is 1–20th or 1–21th, this would be equivalent to lifting his body through one mile per day.

This mode of considering the result is independent of the weight of the agent, and will be found useful in almost every kind of labour, as the work done is generally proportional to the weight of the labourer; and it is easily remembered that a man could lift his own body through one mile by the utmost daily labour he is capable of. Let us now consider the height to which the work that keeps a man's body alive for 24 hours is capable of lifting that same body. The vital work on 150 lbs. is measured by 297·7 grs. urea, and 38·69 grs. of urea are equal to 100 tons lifted one foot, from which I find the following chain:—

	1 lb. living man.
150	297·7 grs. urea.
38·69	100 ton-feet.
1	2240 lb. feet.
5280	1 lb. mile.
	2·18 miles.

Therefore, the vital force that keeps a man of any weight alive for 24 hours, is capable of lifting his body through 2·18 miles in the same time.

I may add, as a confirmation of the estimate of vital work (297·7 grs. urea to 150 lbs.), that I tried some experiments on convalescent hospital patients, who took little or no exercise, and were well fed, and that I found 300 grs. urea to be the daily excretion of men weighing 11 stone, or 154 lbs.

It remains now to determine, if possible, the *Opus mentale*, and to give its coefficient in waste of tissue, or discharge of urea. For this purpose, I constructed the following Table:—

Table L.—*Work done, expressed in Urea Grains, and divided into its component parts.*

No.	Total Urea.	Opus vitale.	Opus mechanicum.	Opus mentale, &c. &c.
	grs.	grs.	grs.	grs.
Table B, No, 1, . . .	367·5	343·3	24·2	–
,, Nos. 2, 3, 4, 5,	400·6	279·8	120·8	–
Table A, No. 1, . . .	465·0	250·1	28·7	186·2
,, No. 2, . . .	677·2	250·1	57·4	369·7
,, No. 3, . . .	644·6	250·1	57·4	337·1
,, No. 4, . . .	554·0	345·3	15·8	192·9
,, No. 5, . . .	630·0	375·1	34·5	220·4
,, No. 6, . . .	484·3	287·8	33·0	163·5

In this Table I have calculated the grains of urea corresponding to the vital work from the expression—

$$Opus\ vitale = \frac{297{\cdot}7 \times w}{150}, \qquad (9)$$

where w denotes the weight in pounds.

I have calculated the mechanical work done by the following equation deduced from (5),

$$Opus\ mechanicum = \frac{5280 \times w \times n \times 38{\cdot}69\ \text{grs.}}{20 \times 2240 \times 100}, \qquad (10)$$

n denoting the number of miles walked.

On making this calculation, I have assumed the partridge-shooting of No. 2, and athletic games of No. 3, as each equivalent to 10 miles' walking. The column headed *Opus mentale*, &c., is found by difference, and has now to be discussed.

In the first place, I take Nos. 1, 5, 6, whose mental occupation was almost identical, consisting of high class teaching, and severe study preparatory to it (correcting the statement appended to No. 6, in Table A, as I find on inquiry, that the two hours there mentioned only include the time of preparation, and not the time of teaching, which was also two hours).

If we suppose that mental work, like other work, causes a waste of tissue proportional to the weight of the body, then the coefficient of mental work, or the number of grains of urea that represent one hour's mental work of a man 150 lbs. weight, will be—

$$Opus\ mentale = \frac{150\ \text{lbs.} \times x\ \text{grs.}}{n \times w} \qquad (11)$$

where x is the number of grains of urea taken from Table K, n the number of hours' work, and w the weight of the subject in pounds.

From this formula I find—

Coefficient of No. 1 = 44·3 grs. of urea.
" 5 = 43·7 "
" 6 = 42·3 "

Mean, . . 43·4 grs.

The near approximation of these numbers to each other is very remarkable when we consider that the residual grains of urea, from which they are calculated, are 186·2, 220·4, and 163·5, respectively. It certainly proves that the hypothesis I have made, that the mental work sets up a waste of tissue proportional to the mass of the body, is very near the truth.

The kind of mental work in which Nos. 1, 5, and 6, were engaged, was much more severe than that known by the title of "office-work," the coefficient of which in grains of urea may be computed from No. 4, by dividing 192·9 grs. of urea by 6, the number of hours of occupation, and reducing the result in the proportion of 174 lbs. to 150 lbs.

Coefficient of routine mental work for man of 150 lbs. weight } = 27·71 grs. of urea per hour.

Whether we consider this kind of mental labour, or that already discussed, it is plain that they both indicate a waste of tissue of a higher order than that involved in the common *Opus mechanicum*, as may be seen from the following comparison of a day's labour in each.

1. *Opus mechanicum*, or 150 lbs. lifted one mile, } = 136·5 grs. of urea.

2. *Opus mentale*, or 5 hours' study, ... } = 217·0 grs. of urea.

3. *Opus mentale*, or 8 hours' office work, ... } = 221·7 grs. of urea.

It remains to consider the cases Nos. 2 and 3, which are exceptional, and do not fall under the preceding investigation. This is shown by the following Table, which distributes the work of Nos. 2 and 3 under the heads already recognised, and shows a residuum not accounted for.

Table M.—*Distribution of work done, after deducting the Opera Vitalia et Mechanica.*

	Opus mentale.	Residuum.	Total.
Table A, No. 1, .	182·3 grs.	+ 3·9 grs.	186·2 grs.
„ No. 2, .	69 5 „	+ 300·2 „	369·7 „
„ No. 3, .	182·3 „	+ 154·8 „	337·1 „
„ No. 4, .	192·9 „	. . . . .	192·9 „
„ No. 5, .	218·7 „	+ 1·7 „	220·4 „
„ No. 6, .	167·8 „	− 4·3 „	163·5 „

The large residuum of urea not accounted for in the cases of Nos. 2 and 3, must be attributed to disease or to some state of mind equivalent to disease. I have ascertained, since completing my observations, that No. 2 had passed a small mulberry calculus some months before I experimented on him, a circumstance which excludes his case from a discussion of the constants of healthy urine; yet I believe the main cause of the excessive discharge of urea in his case, and that of No. 3, is to be attributed to a cause which did not escape the observation of the sagacious Prout[a], viz., *anxiety of mind.*

No. 2 was anxious about business matters at the time of my experiments; and No. 3 was at the same time preparing for a competitive examination, the requirements of which exceeded the efforts of the mental constitution with which nature had endowed him; in other words, his mind was overtaxed by the work which he had undertaken, and the consciousness of this caused the anxiety to which I attribute his surplus discharge of urea.

CONCLUSIONS DEDUCED FROM THE PRECEDING DISCUSSION.

1. The quantity of urea passed per day by men in health varies with their food and occupation, the latter being the principal cause, and regulating the other.

2. Men employed only in manual or routine bodily labour, are sufficiently well fed on vegetable diet, and discharge on an average 400 grs. of urea per day, of which 300 grs. are spent in vital, and 100 grs. in mechanical work. This conclusion is in conformity with the experience of the mass of mankind employed in manual labour in all ages and countries.

[a] Stomach and Urinary Diseases, p. 95. Third Edition. 1840.

3. When the work is of a higher order, a better quality of food must be supplied, sufficient to allow of a discharge of 533 grs. per day of urea, of which 300 grs., as before, are spent in vital work, and 233 grs. in mental work and the mechanical work necessary to keep the body in health.

4. The quantity of urea discharged per day varies also with the weight of the individual, which influences the vital and mental work.

5. The habits, weight, and occupation of the individual enable us to account for a range of the diurnal quantity of urea, varying from 300 to 630 grs. per day; and this discharge may be confidently predicted, when the habits and weight are known.

When, in any case, the discharge of urea exceeds that calculable from the preceding data, it must be attributed to ill health, and most generally to that most fatal of all diseases to which man is liable—anxiety of mind—a vague and unscientific expression, which, however, denotes a most real disease.

This fact alone would render the preceding investigation of importance to the physician, as it enables him, in a given case, to pronounce whether there is an excess of urea or not, and a consequent waste of the system. I have shown that the mere quantity will not decide this question, as from 300 to 630 grs. may be discharged by persons in perfect health, according to their peculiar work and physical conditions.

Note.—The following Table has been published by Dr. William D. Moore, of this city, since the first part of my paper was read, in the Dublin Medical Press of the 27th July, 1859, and reached me too late for insertion in my own paper.

Quantity of Urea eliminated during 24 hours, according to Dr. Warncke.

1.	Adult man (mixed diet), . .	33·7 grms.	520 grs.
2.	,, (vegetable diet), .	25·3 ,,	390 ,,
3.	Adult woman (mixed diet), .	26·8 ,,	413 ,,
4.	,, (vegetable diet),	20·1 ,,	310 ,,
5.	Boy (17 years), ...	19·8 ,,	305 ,,
6.	Girl (17 ,,), ...	18·0 ,,	277 ,,

These results, which are the averages of 7 experiments on each individual, are perfectly in accordance with my own results, contained in Tables A and B.

Art. II.—*On Alum and Ice in Hematemesis.*

By H. R. de Ricci.

Some years ago I had an interesting case of hemorrhage from the stomach, which, contrary to the expectation of the medical men who attended it with me, terminated favourably. The notes of that case, together with many others, remained in my desk, till, on returning a few weeks ago, after an absence from this country of about two years, I took them out; and some interesting cases of this generally fatal disease having lately occurred, I was tempted to lay this one before the profession.

One of the cases I allude to above is the painfully sudden and fatal one of Dr. Robert B. Todd, whose loss will be felt in every place where science is cultivated, and by every member of our profession who feels anxious for its honour and advancement. The death of Dr. Todd leaves a blank, not only in Great Britain, but in the world at large, which it will be no easy matter to fill up,—for he combined in his own person two of the greatest qualities for attaining eminence, and which, though not uncommonly met apart, are very seldom indeed found united in the same individual. Dr. Todd was not only an eminent physiologist, perhaps the first physiologist of his day, but he was also *a most practical physician*,—not confining his studies to the mere theoretical investigation of nature's doings in the economy of the human frame, but applying the facts he thus was gathering and daily adding to, and improving upon rational and scientific principles, an art which, but for the light of physiology, would soon degenerate into mere routine or irrational empiricism.

My patient was a young man of about twenty-one years of age, slightly made, and of delicate appearance, but still not suffering in any way, nor complaining. He belonged to the higher ranks of life, and, mixing in the society of his own sphere, he partook freely of all its various enjoyments. He went to balls, and danced much; he went to hunts, and rode hard, yet he never seemed much the worse for his active amusements. His appetite was good, and his digestion equally so; only it was observed that he appeared always to have a craving for sweetmeats of all kinds, and at dinner he would take his meal principally of the cakes and jellies of the second course, rather than of the substantial joints which preceded it.

One day, as he was out riding, he felt suddenly weak, and as if unable to hold in his horse; he, therefore, turned home, where, immediately on his arrival, he was attacked with vomit-

ing of blood, which, though at first dark and grumous, was quickly followed by more of decidedly arterial character.

I first saw him about twenty hours after the first attack. He had been in the meantime most judiciously treated, but, unfortunately, the turpentine which had been prescribed, and which is so powerful in restraining internal hemorrhage, acted invariably as an emetic, and in consequence had reluctantly to be abandoned for other remedies.

On my arrival the patient presented the usual anemic appearance which attends profuse hemorrhage. His countenance was anxious, bathed in cold perspiration, his eyes sunk, and his pulse rapid and weak. There had not been any hematemesis for some hours previous to my arrival, and the astringent remedies which had been administered seemed for the present to be exerting a beneficial effect; we, therefore, retired to consult upon the probable origin of this bleeding, that we might be guided by as correct a diagnosis as possible, into the most rational, and, therefore, the most likely to be successful, mode of treatment.

The predominant opinion at the consultation was, that the hemorrhage proceeded from a general oozing from the mucous membrane of the intestinal tract, and this view was strengthened greatly by the abundant tarry stools which the patient had passed since his first attack. But, after attentively listening to all the evidence I could collect on the subject, and carefully examining the last blood vomited, I came to a different conclusion as to its origin and source. I believed it to proceed solely from the stomach; my principal reason for such a conclusion being the *bright colour* of the blood, it coming up in large quantity, firmly coagulated, some of the coagula being apparently accurate casts of the curvature of the stomach. Had the vomited blood regurgitated out of the duodenum from antiperistaltic action, it would have been of a very different colour, much darker at any rate, if not entirely black; and it would have been different in character also, not in firm coagula, but grumous. As for the melanotic stools, they were easily accounted for, without the aid of bleeding from the intestinal mucous membrane; in all probability there had been some hæmorrhage previous to even the first attack of hematemesis, but it had not been so great as to over-distend the stomach, and compel it to relieve itself by vomiting, and it had been got rid of by the usual process of digestion, thus tinging with blood the patient's stools. The vomiting also came on at intervals of some hours, the patient complaining of a sense of distention before, and of considerable relief after having vomited.

From these several symptoms I concluded that the origin of the hemorrhage was probably an ulcer—the "perforating gastric ulcer of Rokitansky" so well described by Dr. Cathcart Lees, which, happening to lie over the track of an artery, had eaten away into its coats; or it might be solely a bleeding from the surface of the ulcer, resulting from an hemorrhagic tendency. An objection raised to this diagnosis was, that so serious a lesion of the stomach could not have existed without our patient having previously complained of uneasiness, if not actual pain, in that region; but the disease in question (as Dr. Lees informs us) "may proceed even to perforation of the peritoneum without any premonitory symptom to lead our attention to the part." And besides, upon inquiring, I found that our young patient had for some months complained of uneasiness immediately after eating, and that especially if he had taken solid meat. This served to confirm my diagnosis, and, having thus made up my mind as to the origin of the blood, I proceeded to select a remedy which, by acting locally on the stomach, would afford us some hopes of staunching its flow. Turpentine, as I have stated above, was inadmissible; so we tried gallic acid in full doses and acetate of lead often repeated, but we completely failed in restraining the hemorrhage, which returned every few hours. We tried matico and every other vegetable astringent that could be thought of; we even deluged our patient with Ruspini's styptic, which had been suggested by some non-medical friend; but all to no effect.

All this time we had been giving nourishment in the shape of iced beef-tea, with eggs, jellies, and arrow-root; and when the powers of life seemed ebbing low, we had cautiously administered claret. But still the hemorrhage persisted.

After the last act of vomiting, the change in the aspect of our patient became so alarming, that for some minutes we were in doubt whether the spirit had not fled; no pulse could be felt at the wrist; the eyes were fixed and glassy; and the respiration seemed to be suspended; we quickly administered some brandy and water by the mouth, and gave an enema with chloric ether to try and rouse our patient; and, having had a brief and rapid consultation with my colleagues, to whom I succinctly explained my views, I determined to give at once a large dose of powdered alum, to pack the stomach with small pieces of ice, to place a bladder filled with ice over the epigastrium, and, in order to counteract the very lowering effects of such treatment, and avert the already impending death by asthenia, to administer brandy, ether, and other stimulants, as also food, *per anum, and to give no nourishment by the mouth until we could*

fairly hope that a firm and satisfactory coagulum had been formed at the mouth of the bleeding vessel. This plan I saw carried out myself, not trusting even the administration of the enemata to nurses and underlings. Every three hours the alum and ice were to be repeated, as also the enema, which consisted of the yolks of two eggs, a tablespoonful of essence of beef, the same quantity of port wine, and five grains of quinia. This was administered with the long tube, and, fortunately for our patient, he had a wonderful retentive capacity, having succeeded in holding as many as six of these injections without feeling any desire to go to stool. Slowly the weary hours crept along, as we anxiously watched for the return of that dreaded vomiting! Twelve hours had now gone by since the adoption of my plan, and no hematemesis had returned; at the same time that the freezing process had produced no ill effects upon our patient, thanks to the nourishment and stimulants he was getting per anum. We now began to diminish the alum and ice, but still persisted in giving food only by the rectum. Twenty-four hours elapsed, forty-eight hours, seventy-two hours, and no hemorrhage. We now stopped the alum entirely, and only gave a little ice occasionally, but still kept up the injections; at last, imagining all danger to be over, we ventured to give a little nourishment by the mouth, for we believed that by this time not only was there a firm clot established, but we even hoped it might be partly organized. But we were doomed to dissappointment! and, ninety-five hours after the last attack, blood vomiting set in again, and in such fearful quantities that, at one moment, we believed our patient gone. Again we resumed the old plan, which had already proved of so much service: again we administered large doses of alum, and again we packed the stomach with ice, and repeated the enemas, with food and stimulants; but, though I still held out hopes to his distracted parents, I confess that I myself had very little; while my colleagues, I think, had none at all, and some even considered me unwise in persisting in a plan which apparently only seemed to disturb what, to all appearances, was a *dying man*.

But I had confidence in the plan which had proved already so powerful in my hands; I only feared the state of excessive prostration to which the last attack of hematemesis had brought our patient, and which, by so reducing the vital forces, might render him incapable of responding to the stimuli which we were now freely administering to him. I would have given anything for an apparatus for the transfusion of blood. If the patient did not rally soon from the stimulants administered, he

would *die from want of blood*, and if I could only extemporize an apparatus and transfuse even a small quantity of that life-giving fluid, I felt that the patient could be saved. Necessity is the mother of invention: I had with me a small pewter syringe capable of holding about four ounces; to the nozzle of this I adapted about one inch of the extremity of a gum-elastic catheter open at the end; and having got up a stout young fellow from the farm-yard, to whom I explained my object, I waited for the moment when I should perceive that life was ebbing fast, and then, trusting to Providence, make the best use I could of my very clumsy and primitive apparatus. Fortunately we never had to recur to this "ultima ratio;" the alum and ice again did their duty, as also the stimulants and the food. We persisted in the use of these a longer time than on the previous occasion, and finally, after three weeks' anxious watching, and upwards of 140 hours' absolute fasting, so far as the stomach was concerned, we had the satisfaction of seeing our patient fully convalescent.

All fear of hemorrhage once passed, we gave chalybeates and vegetable tonics, fresh air, and gentle exercise, as also food in gradually increasing quantities; and, now that several years have elapsed, I am happy to say that our patient never was in such good health as at present. All trace of delicacy has disappeared, and he is as stout and as hearty as any man need wish to be.

I do not remember ever reading anywhere of alum being prescribed in such case, or in an analogous one; and at first sight it would seem an improper remedy, as alum in large doses generally acts as an emetic, but in this case it appears to have been kept in check by the ice. It is also instructive to remark how utterly useless were all the vegetable styptics we tried, and I think I can fairly assert that we proved most of those described in books.

In conclusion, let me say a few words about transfusion of blood. Many years ago I ventured to assert, that a time was coming when *venesection* would be as rare an operation as it was then a common one; that time has very nearly arrived; I now go a step beyond, and venture to predict that a time will come when transfusion will be commonly practised, not only in cases of "killing hemorrhage," but in many case of disease also not depending on loss of blood. We have abundant proofs that not only can blood, but many different and heterogeneous fluids, be injected into the circulation of a living animal, *without the slightest peril.* The only difficulties we have to contend with in tranfusion of blood are the danger of introducing air

into the blood-vessel, the viscidity of the fluid itself, its tendency to coagulate, and the consequent danger of small pieces of solid fibrine entering the circulation. I think that the danger from the entrance of air has been much exaggerated, and at any rate a little care would be sufficient to obviate it. As for the viscidity of the blood and its tendency to coagulate, I do not despair of overcoming that difficulty also, and of so preparing the blood, *without impairing its vitality*, as to render the injection of it into a vein a matter of only ordinary care.

Art. III.—*A Case of Dislocation of the Ulna forwards at the Elbow, without fracture of the Olecranon Process; with Observations.* By Edwin Canton, F. R. C. S., Surgeon to the Charing Cross Hospital, and Lecturer on Surgical Anatomy.

" There is no joint in the body which, under accident, requires more anatomical and physiological knowledge than the elbow,—particularly in dislocation,—where the force required to separate the bones must necessarily be so violent as to produce extensive tumefaction of the soft parts, and conceal the relative position of the natural eminences of the joint which can alone lead to a correct judgment of the injury. Swelling, pain, and loss of motion, are not the signs by which the true nature of the accident can be comprehended; but the fixedness of the joint, and the change of the position of the condyles of the humerus with the olecranon process of the ulna, are the best indications of the displacement of the articulatory surfaces of the elbow-joint."—B. Cooper, *Lectures on the Principles and Practice of Surgery*, p. 343. London: 1851.

So rare is dislocation of the ulna forwards at the elbow-joint without a simultaneous fracture of the olecranon process, that many authors have denied the possibility of its occurrence:—e. g. Petit[a], Boyer[b], Monteggia[c], Sanson[d], Bérard[e], Savary[f], S. Cooper[g], B. Phillips[h], Chelius[i]. The following writers tacitly agree with the above, by making no mention of this form of injury:—Vidal (de Cassis)[j], Dupuytren[k], Sir A.

[a] Maladies des Os, tom. i., p. 236. Paris: 1772.
[b] Traité des Malad. Chirurg., tom. ii., p. 379. Paris: 1818-26.
[c] Institut. Chirurg., vol. v., p 71. Napoli: 1825.
[d] Nouv. Elém. de Pathol. Med. Chir., tom. iv., p. 623. Paris: 1828.
[e] Dict. de Méd. Art. " Coude."
[f] Dict. de Scien. Med. Art. " Coude."
[g] First Lines of Surgery, p. 700. London: 1840.
[h] Lectures on Surgery, Medical Gazette, July 10, p. 615. London: 1840.
[i] System of Surgery, vol. i. p. 788. Translated by South. London: 1847.
[j] Traité de Pathol. ext. Paris: 1839.
[k] Surgical Works.

Cooper[a], Adams[b], Liston[c], Miller[d], B. Cooper[e], and Pirrie[f]. The surgeons who have conceived the possibility of this accident taking place, and those who have seen examples of it, will be referred to in the progress of these observations.

The configuration of the articulatory surfaces of the elbow-joint and the arrangements of its ligaments to constitute the most perfect angular ginglymus in the body; the small coronoid projection in front and disproportionately large olecranon behind, with the lesser and greater pits to receive them, in flexion and extension, respectively; together with the wider range of motion enjoyed in the former than in the latter direction, fully explain why dislocation of the ulna backwards without fracture is of extreme frequency compared to the anterior displacement of the ulna with its olecranon process continuing intact. All circumstances connected with the former accident are well understood; but, with respect to the mode of production of the latter, the latest writer on dislocations observes:—"It is only as the result of very violent and extraordinary accidents, by which the forearm is forcibly flexed, or *greatly extended*, or twisted, or some other unusual or indirect way, the olecranon is placed in front of the humerus"[g]. Nélaton[h] believes that it is through a fall on the elbow whilst the forearm is *forcibly flexed*, that this luxation is produced, and he quotes a confirmatory opinion of Malgaigne[i]. Debruyn[j] has convinced himself, by experiments made on the dead body, that this displacement can only occur, according to the mechanism first pointed out by Colson[k]:—"1°. Par une flexion forcée de l'avant-bras sur le bras. 2°. Par un mouvement imprimé à l'avant-bras, de façon à lui faire décrire un arc de cercle autour de l'arc de l'humerus. 3°. Par une extension forcée de l'avant-

[a] Surgical Works.

[b] Cyclopædia of Anatomy and Physiology. Art. "Elbow-Joint."

[c] Elements of Surgery. London: 1840.

[d] Practice of Surgery. Edin.: 1856. [e] *Loc. cit.* London: 1851.

[f] Principles and Practice of Surgery. London: 1852.

[g] Hamilton, F. A Practical Treatise on Fractures and Dislocations, p. 594. Philadelphia: 1860.

[h] Elem. de Pathol. Chirurg., tom. ii., p. 387. Paris: 1847–48.

[i] "Quant à la luxation en avant, si l'or suppose une chute sur le coude lorsque l'avant-bras est fortement fléchi, il est aise de voir que les sailles osséuses ne font nul obstacle au deplacement, et qu'il suffrait dans cette position, d'une chute sur l'olécrâne."—Malgaigne, Traité des Fractures, et des Luxations, tom. ii., p. 626. Paris: 1855.

[j] Mem. sur les Luxations de Coude. Annal. de Chirurg., tom. ix., p. 46. Paris: 1843.

[k] Archiv. de Méd. Journal complém. Thèse de 1835, tom. ii., p. 377.

bras, ce qu'il appelle 'flexion en arrière.'" In no case did it appear to Debruyn that flexion alone was adequate to the production of this peculiar luxation. He conceives, however, that it could occur where external force operated on the olecranon from behind forwards, whilst the forearm was held in a state of forcible flexion. In a case of this dislocation which came under the care of Monin, and occurring to a child between six and seven years of age, the patient fell, with violence, upon the elbow, whilst the forearm was forcibly flexed on the arm[a].

The first case of this accident, I believe, distinctly recorded, was one that came under the charge of Colson[b], and occurred to a lad aged 15, who fell on the right elbow while skating, at the same time that the forearm was semi-flexed, so that the weight of the body, increased by the suddenness of the fall, bore on the olecranon process, and, driving it forwards, caused it to abandon, completely, the humeral trochlea.

Having now considered the mode of production of this injury, I pass to a review of the symptoms by which it is to be distinguished:—Increased length of forearm; absence of the olecranon at the posterior part of the joint; slight flexion of the elbow (in a case, however, recorded by Guyot[c], the forearm was in a straight line with the arm); tension of the integuments; projection of the tendon of the biceps, and a bony eminence to be felt internal to it; the lateral parts of the joint flattened and depressed, presenting on either side a longitudinal fossa; and posteriorly two eminences separated by a depression, or rather a gutter which extends from the posterior surface of the arm, beneath the inferior extremity of the humerus, in place of the eminence which should exist here; movements of the articulation limited and very painful; in the cases, however, of Colson and Guyot[d], the joint permitted of great mobility.

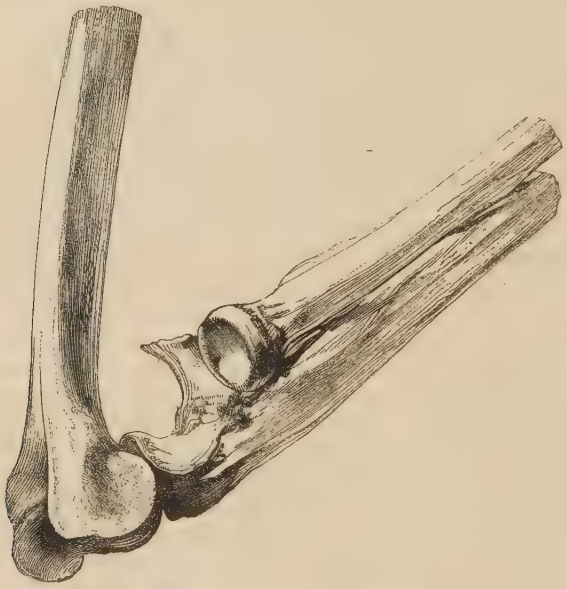
It would appear from the accounts of those authors who have treated this form of accident, that reduction was accomplished with comparative facility. Debruyn remarks:—"Il suffit, après avoir par l'extension, descendu les extremités articulaires des os de l'avant-bras au niveau de celle de l'humerus de fléchir brusquement le membre, pour voir les os reprendre leur position naturelle[e]."

[a] Journal de Chirurg., tom. ii., p. 119. Paris: 1844. Quoted from the Journal de Méd. de Lyons.
[b] *Loc. cit.*
[c] Revue Med.-Chir., tom. ii., p. 106. Paris: 1847.
[d] *Loc. cit.*, p. 48.
[e] *Loc. cit.*

The following case came under my care in the Charing Cross Hospital:—F. P., aged 40, a somewhat short, slim-built, but muscular man, while driving in a light cart at the rate of seven or eight miles an hour, was thrown out, and instinctively extended his right hand to prevent injury to his head. The weight of the body, however, caused sudden and forcible flexion of the elbow, and at the same time the forearm became twisted in under the chest. On rising, it was found that the elbow was considerably swollen, and the power of moving it entirely lost. When admitted into hospital, the forearm was forcibly flexed, and the hand supinated. The swelling, ecchymosis, and tension around the elbow were so great that it was with difficulty any of the more salient anatomical peculiarities of this part could be recognised,—everything appeared, in every way, so disarranged. The skin covering the inner condyle was stretched to the utmost, and here, over a space about the size of a sixpence, it was to such a degree injured, that a compound state seemed to be momentarily threatened. The antero-posterior and lateral diameters of the joint were increased in extent, and the general swelling was so great as to present a circumference far beyond the normal size of this region. Externally and somewhat anteriorly the cup-like cavity of the radius could be indistinctly distinguished; internally, the condyle was unduly prominent; anteriorly no particular point for diagnosis could be determined on, on account of the state of forcible flexion and great tumefaction there; posteriorly also the swelling was very considerable, but, below it, there existed a depression favouring the view that the ulna was broken immediately below its olecranon process. No median gutter, with lateral elevations to bound it, could be felt.

Attempts were made to rectify the mal-adjustment, but without success; the efforts, however, could not be longer continued, for, it was obvious that the injury already sustained by the soft parts was so extensive,—the obstacles to be overcome so resistent, and the great likelihood incurred of rendering the case one of the compound kind, forbade further trial, and it was agreed, in consultation, to place the limb at rest on a splint, and to keep the parts cool with an arnica lotion. Within the course, however, of forty-eight hours the tumefaction became still greater; a large slough was forming on the inner side of the joint, and high constitutional irritation having set in, I was obliged to amputate the limb at a sufficient distance above the articulation.

Dissection.—A very careful examination of the elbow was made, under my superintendence, by my pupil, Mr. Edgar Browne, with the following results:—



Bones.—The ulna was dislocated forwards, so that the upper surface of its olecranon process became placed in front of the capitellum humeri, and had thus assumed the position naturally occupied by the head of the radius during flexion of the forearm. The radius was supinated and maintained *in situ naturale*—as regards the ulna—by the coronary and interosseous ligaments being intact.

Ligaments.—Of the anterior ligament, the only part remaining at all perfect was a shreddy portion about the centre; all the rest of it had been torn through. The posterior, and both lateral ligaments were completely divided. The coronary and oblique ligaments were uninjured.

Muscles.—The triceps extensor was detached from all its points of insertion. The supinator radii longus was uninterfered with at its origin; but the two radial extensors of the carpus beneath it were torn away from the surfaces whence they spring. All the muscles which arise from the external condyle—with the exception of the supinator radii brevis, and

anconæus—were detached from this process. The only muscle that was torn through at its origin from the internal condyle was the flexor carpi ulnaris,—the olecranon and ulnar portions of it, however, continued intact. No mischief whatever had happened to any other of the pronators and flexors. The biceps and brachialis anticus were put greatly on the stretch.

Blood-vessels.—Though much shifting of their position had necessarily taken place, no vessel of large size had been injured; the sacrifice, however, of smaller ones must have been great—judging from the large amount of blood with which all the soft textures were infiltrated.

Nerves.—The ulnar nerve was torn across where it passes behind the inner condyle. The sheath of the median was distended, and its substance permeated with blood. The other nerves uninjured.

Art. IV.—*Contributions to the Surgical History of Syphilis.* II. *On Syphilitic Stricture of the Œsophagus (continued)*[a]. By James F. West, Surgeon to the Queen's Hospital, Birmingham.

Since my last communication to the Dublin Quarterly Journal of Medical Science, on Syphilitic Stricture of the Œsophagus, I have witnessed a case which still further strengthens my belief in the frequent existence of ulceration of that tube in persons whose blood is imbued with the syphilitic virus. The symptoms in this patient were certainly not so well marked as in the two cases there related; but the ulceration had not extended so widely, or produced such a narrowing of the canal as to render the diagnosis of stricture of the œsophagus perfectly clear and conclusive. Moreover, death did not result so much from the starvation thus induced, but from that combination of untoward symptoms which Mr. Acton has judiciously grouped together under the term "syphilitic cachexia."

The history of this patient, in a condensed form, I extract from my hospital in-patient report-book. It is needless to particularize her symptoms and condition from day to day, or to dwell on the various prescriptions which were used for her relief; none produced any permanent benefit. Mercury, used carefully in the form of dry calomel fumigation until slight salivation was produced, was thought at first to have caused some of the rupial sores to heal up; but although it may have had that effect, it probably tended at the same time to reduce her

[a] See vol. xxix. p. 86.

strength, and to aggravate the debility and cachexia which the syphilitic poison by itself is prone to excite in such constitutions. Iodide of potassium did not give any decided signs of amendment; but it never could be fairly tried, in consequence of the diarrhœa which its administration produced.

Syphilis had ravaged her never very vigorous constitution for months before she sought medical relief. She was reduced to a desperate condition of anemia and prostration when she presented herself for admission at the Queen's Hospital; and it was only by the constant administration of support and stimulants that her life was prolonged during the six months that she was an inmate of that institution. That such cases are far from rare in some large towns, I am perfectly convinced; they are the results of syphilis in persons of strumous habit, who have assisted in the further degeneration of their vital powers by taking insufficient and improper food; by the inhalation of the impure air of crowded courts and lodging-houses; want of cleanliness; and lastly, by drunkenness and debauchery.

That we seldom hear of them is perhaps partly owing to such patients dying either in workhouses, where the parochial medical officers have already their time so much occupied as to prevent their devoting much of it to pathological research; or else, in the squalid, poverty-stricken houses of wretched courts and alleys, where the means of making a post-mortem examination are altogether wanting; and partly to the desire which surgeons show to publish their successful cases, particularly those in which the knife may have been used for the performance of some new operation, or, still more often, of some trifling modification of an old one, in preference to those in which an unfortunate result had attended their efforts, however meritorious and long continued those efforts may have been.

Mary H., widow, aged 25, was admitted into the Queen's Hospital, July 12, 1859, with secondary syphilitic rupial crusts and ulcerations over the face and legs. The general health was extremely bad, and she was much emaciated. She stated that she contracted sores from two to three months before the rupial crusts appeared, but that she underwent no treatment for them, and was unaware of their nature until a week before admission, when a surgeon who examined her declared them to be syphilitic.

On admission, poultices were applied to the crusts, and stimulants and tonics, with liberal diet, were given internally. In the course of a week she rallied, and improved in strength and appearance; the crusts cleared off, and displayed the usual excavated circular livid ulcers of secondary syphilis. Dry ca-

lomel fumigation was ordered, and used on four successive days, when, its effects having become evident on the gums, it was discontinued. For ten days from this time there was considerable improvement in the appearance of the sores; some of them filled up, and all took on a more healthy action; however, there was no corresponding improvement in her general condition; her appetite was very bad, and her debility seemed to increase rather than diminish. Wine, with beef-tea, eggs, and arrow-root, were allowed daily in addition to the ordinary hospital diet; decoction of bark and nitric acid were given also.

In the beginning of September the sores were looking very unhealthy and callous, and the application of nitric acid to them was therefore tried, and followed up by charcoal and linseed-meal poultices. Under this treatment the sores cleaned slightly, but showed no tendency to cicatrize. Iodide of potassium in 5-grain doses, and a mild stimulant lotion of liquor sodæ chlorinatæ were ordered on the 7th of October, and continued until the 15th, when it was found necessary to suspend them in consequence of violent diarrhœa having set in, and a new rupial sore of large dimensions (3 inches by 1) having formed on the right ala nasi. Acetate of lead and opium soon checked the diarrhœa; but the ulceration of the nose and cheek having extended, it was again necessary to resort to the use of nitric acid and charcoal poultices. The slough having cleared away, iodide of potassium in smaller (3-grain) doses was then tried, but its tendency to produce diarrhœa having again manifested itself, it was discontinued. Bichloride of mercury in small doses was then had recourse to, but without avail; she became more debilitated; the sores increased in size and number, in spite of the oft-repeated application of nitric acid and of every kind of astringent and stimulant preparation that could be thought of. Difficulty in swallowing food and medicines began to be noticed about the end of December; it attracted little attention, however, as her general condition was so bad as to preclude the hope of satisfactorily treating any affection of the fauces or œsophagus to which it might be owing. Constant exhibition of stimulants and fluid nourishment was necessary; ether and ammonia were in requisition every few hours, to ward off the fatal termination which was anticipated, and even thought to be imminent every day during the month of January, 1860. In this fearful state, unable to leave the hospital, or even to have her bed changed, she lingered on till the 4th of February, when death put an end to her sufferings.

The post-mortem examination, made 45 hours after death by Dr. Walker, revealed the following condition:—The body

was that of a small emaciated woman, whose legs were drawn up to the abdomen, in consequence of the contraction caused by cicatrization of ulcers about the knees, and whose face, legs, and trunk presented numerous patches of rupia in various stages, interspersed here and there with cicatrices of old spots of ulceration. The nose was almost destroyed by a recent ulcer, and the back was the seat of a large sloughing bed-sore. The head was not examined, in consequence of vermin swarming about it.

The heart was healthy in texture, but the foramen ovale would admit a goose-quill; weight, 6 oz.

The lungs were healthy.

The œsophagus presented a reddish, livid erosion of the mucous membrane at its lower part for about two inches, more especially just above the cardial orifice of the stomach. There was no deep ulceration or marked constrictions, but considerable fibrous deposit in the submucous tissue, which apparently diminished the caliber of the canal immediately above the chief erosion.

The liver was pale and fatty, but not hypertrophied. The knife became very greasy on a section being made; weight, 43 oz.

Spleen normal, 4 oz.; kidneys anemic, each 3 oz. The supra-renal capsules presented a limited deposit of gray exudation in the central cavity.

The mucous membrane of the *stomach* was throughout softened, and an irregular shallow ulcer, the size of a shilling, was formed on the lesser curvature.

There was slight congestion and abrasion of the vaginal surface of the cervix uteri, but the uterus was otherwise normal, and the ovaries were free from disease.

Here, then, is another instance of the existence of ulceration in a canal which has hitherto been looked upon as more free from the influence of the syphilitic poison, and less frequently the seat of its organic lesions than most of the other parts of the body. Its extent and intensity were not so great as to seriously impede the passage of fluids, but solid nutriment was, during the last five weeks of the patient's life, taken with considerable difficulty, and it is more than probable that, had the reparative powers of her constitution been greater, the ulcer of the œsophagus would have shown a tendency to cicatrize, and, from its cicatrization, diminution of the caliber of the canal would almost inevitably have resulted.

The situation of the ulceration at the lower part of the œsophagus, close to the cardial orifice of the stomach, is remark-

able, particularly as, towards the same end of the tube, a similar condition had evidently existed in the case of Jane M., previous to the stage of constriction coming on. The ulcer found in the stomach may most likely be referred to the same origin as that in the œsophagus, though smaller in size, and its appearance was very similar; it was altogether distinct in character from that which is termed the "perforating ulcer," and more nearly resembled that form of hemorrhagic erosion which is found in cases of death from burns.

The absence of tubercular disease of the lungs, and, in fact, the non-existence of any visceral lesion whatever, that would be sufficient to cause death, further assist us in arriving at the conclusion that, to syphilitic cachexia, together with ulceration of the œsophagus and stomach, which must be regarded as phenomena of that condition, the fatal termination in this interesting case must be assigned.

The girl, H. P., whose case I related in my last paper on this subject, is still living, but her condition is daily becoming more perilous. She is very irregular in her attendance at the hospital, and declines to become an in-patient. I have lately, at the suggestion of Mr. Acton, who was kind enough to express an interest in the case, given much larger doses of the iodide of potassium than I had previously exhibited, as much as twenty grains being now given for a dose, but its effects cannot be clearly determined from the cause before stated.

(*To be continued.*)

Art. V.—*Remarks on the Causes, Diagnosis, and Treatment of Arteritis.* With Illustrative Cases. By C. Thompson, M. D. T. C. D., L. R. C. S. I., formerly Surgeon to the Finglas and Glasnevin Dispensaries and Claremont Institution, and late Assistant Surgeon, Rifle Brigade.

Case I.—Private Thomas Peake, Rifle Brigade, aged 19, an English labourer—a recruit—of strumous diathesis and nervous temperament, was admitted into the General Hospital at Portsmouth, on the 28th of January, 1855, with paronychia of the right middle finger. About a year previously he had fractured his right clavicle, but seemed to have recovered from the effects of that injury. He could not assign any cause for his present complaint, unless a fall that he had got some days before while "larking with his comrades." On admission, the finger was swollen, very painful, of a dingy red colour, with throbbing of the arteries of the hand and the usual symptoms of an ordinary whitlow.

Treatment.—Fomentations and poultices were applied, and an aperient was administered.

29th. Had a bad night. No sleep from pain in finger, which was deep-seated, acute, and of a lancinating character. Surface bluish, and so sensitive that he could not bear to have it touched. Swelling increased, extending now over the back of the hand, and to the adjoining fingers. No distinct fluctuation. An incision was made, but without giving exit to any matter. No arterial blood flowed; but only an oozing from the venous capillaries. Ordered a fomentation, with decoction of poppies, and a fermenting poultice. The saline mixture of the hospital, and an opiate pill (one grain) every four hours, with a nourishing diet, including an egg for breakfast, strong beef-tea, and a bottle of Guinness' stout.

30th. No improvement; had no sleep; pain in finger so excruciating that he kept all the other patients in the ward awake with his shouting. Finger looks darker in colour. Hand and wrist much tumefied, cold, purplish, and œdematous. Wrist at pulse imperceptible, both in radial and ulnar arteries. Fever becoming typhoid, as evidenced by rapid, weak, irregular pulse, dry brown tongue, and low delirium.

Amputation was proposed, but negatived by a consultation of medical officers, on the ground that the line of separation had not yet formed. Fomentations were repeated, and warm water-dressing substituted for the poultices, which increased the pain by their weight. Quinia, camphor, and opium were also prescribed. Same diet was continued, with the addition of two gills of port wine, and, from time to time, inhalations of chloroform to relieve pain.

31st. Had some quiet sleep from the chloroform, but otherwise no improvement. Whole hand now in a state of soft gangrene, which is rapidly spreading up the forearm. Typhoid symptoms more strongly marked. No pulse in forearm. Vesications forming on dorsum of hand, which exhales a gangrenous odour. No appearance of boundary line. Same remedies repeated, with a gill of brandy in addition to the wine.

February 1st. Mortification rapidly spreading; elbow and lower end of the arm now involved, and accompanied by constitutional symptoms, indicative of contamination of the blood. As the line of separation was not likely to form, and the patient was evidently sinking, it was resolved to give him a chance for his life by amputation. I accordingly removed the limb, by the circular operation, below the insertion of the deltoid. The removal of the diseased limb was followed by the immediate subsidence of the constitutional disorder. The

patient slept soundly that night; gangrene was arrested, and the system soon rallied under the influence of tonics and a generous diet, with a liberal allowance of porter and wine. The stump healed favourably without a single bad symptom, and in six weeks from the date of admission, he was discharged convalescent.

Had the "rule of practice" for such cases (namely, not to amputate before the formation of the boundary line) been longer enforced, in the example before us, there can hardly be a doubt that we should have realized the lines of the poet :—

> "Rusticus expectat dum defluat amnis, et ille
> Labitur et labetur ;"

and have waited for a result that would never have happened; and, in the meantime, the life of the patient would have fallen a sacrifice to professional pedantry and routine.

I made a dissection of the amputated limb, and found the arteries of the forearm, and the brachial at the elbow, converted into fibrous chords. In that portion of the brachial artery that was divided during the operation, the blood was beginning to coagulate; while the tract of vessel between it and the elbow exhibited all the intermediate gradations between incipient inflammation and obliteration. The veins of the wrist and forearm also were converted into impervious chords as far as the elbow, where the superficial veins were filled with loose coagula; their lining membrane, moreover, was inflamed, thickened, and of a violet colour. No pus was found either in them or the arteries.

Case II.—Private E. Jones, 64th Regiment, aged 23, of sanguine temperament and robust frame; an Irish labourer; two years' service; being on detachment duty, he was admitted into the hospital of 1st Battalion Rifle Brigade, at Aldershott, on the 20th of September, 1856, under the following circumstances:—He had been in good health up to the evening before admission, when he was seized with severe pain in the right great toe, which prevented him from sleeping that night. Knew of no cause for its occurrence, except the fatigue of a long march a couple of days before. When examined, the toe looked swollen and livid, and its ball was red, hot, and very tender. Had never had gout or rheumatism. No difference in the temperature of the feet, nor in the pulse of the tibials, which beat alike in both limbs. Some thirst, with slight pyrexia. Ordered a dose of calomel, to be followed by a dose of castor-oil. A hot stupe of decoction of poppy-heads and fermenting poultice to the toe, and to have saline mixture. He

was put on low diet, and at night an opiate was prescribed to procure him sleep.

21st. Had no rest on account of the pain, which was deep-seated and burning, shooting up the limb. Could not bear the pressure of the poultice, owing to the sensibility of the cutaneous surface; toe dark-coloured, but no swelling of foot, or indication that the disease was spreading. No appreciable fever. Warm water-dressing was substituted for the poultice. An opiate pill (one grain), three times a day, with refrigerants and effervescing draughts, were also ordered.

22nd. Slept better last night, and felt the water-dressing more comfortable than the poultice; less pain to-day; febrile symptoms have nearly disappeared; toe becoming dark in colour; inflammation of ball diminishing; same remedies repeated.

This state of things continued for some days, when a line of separation began to form over the middle of the first phalanx. The mortified part daily grew blacker and more shrivelled, while the rest of the foot gradually recovered its normal appearance. There was still, at times, stinging pain in the part, but not so great as to disturb his rest. In a fortnight from the date of admission the line of separation had formed. Health and appetite good; except the dead member, there remained about him no indication of disease. He was kept quiet in bed, on half-diet and a pint of stout daily. Quinia, with acid, was given for some time, and the toe was dressed with lotions of chloride of soda, nitric acid, black wash, acetate of lead, water-dressing, &c., alternated one with the other. Under this treatment absorption went on, and a furrow formed between the dead parts and the living. In another fortnight the connecting medium of bone was so far removed as to admit of the mummified toe being snipped off with Liston's cutting forceps; after which the dead extremity of bone soon came away, and the stump healed kindly. He was discharged convalescent soon afterwards.

This case contrasts remarkably with the foregoing one. Here were two young men attacked with gangrene, the result of arteritis, originating in causes that could not be explained. Both are subjected at first to a like treatment; yet in one case the disease extends so rapidly that life must soon have been lost but for surgical interference, in the removal of the part; while, in the other, the attack is arrested by the conservative powers of the system, and the dead member is thrown off by a natural amputation. To what cause are we to attribute the difference of result in two cases so similar? The explanation lies in their

diversity of organization. The diathesis of the one was strumous and irritable; while the constitution of the other was sound and vigorous.

Case III.—Mr. H——t, aged 18, of bilio-sanguine temperament and athletic frame, a student in the Dublin University, had enjoyed excellent health until the 14th of December, 1846, when he complained of chilliness, followed by low spirits, headach, and general sense of malaise. The weather at the time was intensely cold, and for some days previously he had a fissure in the centre of the lower lip, which he was in the habit of picking, and which occasionally bled a little. About this time he accompanied a friend (who was a medical student) into the dissecting-room of the Anatomical School, in Park-street, where he spent some time handling the subjects. He was not addicted to smoking; nor had he lately taken mercury; neither was he aware of having sustained any injury to account for what followed. On the 15th he felt a swelling of the chapped part of the lip, about the size of a hazel-nut; the tumour was hard, painful, and of a livid colour. On the following day I first saw him. The lip was then as thick as a sausage (which it much resembled), very painful, nearly black, everted, and as hard as brawn. The darkness of colour gradually changed, towards the cheek and chin, to purple and dusky red. He complained of stiffness and pain in the left side of the face and neck, with headach, giddiness, nausea, and thirst. No difference in pulsation of carotids. Pulse small, weak, and frequent. Tongue coated with yellow slime; had some delirium during the night. Bowels had been well opened before I saw him.

Treatment.—Fomentations and fermenting poultice to lip; internally, bark, with camphor and chloric ether. His strength was supported with strong beef-tea, port wine, and Guinness' bottled stout; an opiate was given at night.

17th. Had no sleep; low delirium all night, which continues; gangrene rapidly spreading; left cheek and chin greatly swollen and discoloured; integuments hard and œdematous; left eyelids nearly closed up; constant dribbling of fetid saliva from the mouth, which he keeps half open; gums dark-coloured; fever low and typhoid. Had Mr. Cusack to see him in consultation; at his suggestion a few small incisions were made into the tumefied tissues, but no blood or matter issued from the wounds. The cut surfaces presented a smooth, black, homogeneous appearance, and a texture about the consistence of liver.

Treatment.—Warm stimulating dressings to the part (consisting of decoction of cinchona, with camphorated spirits of

wine); carbonate of ammonia and opium in large doses, with essence of beef, jellies, wine, brandy, &c., &c., and a terebinthinate enema. But treatment was unavailing. The mortification continued to spread over the left side of the face, as far as the forehead, extending backwards to the occiput. Tongue dry and brown; face a dirty yellow colour. The delirium had merged in coma, and respiration had become panting and stertorous. All the symptoms indicated contamination of the blood, and prostration of the vital powers. He died on the evening of the 18th. A post-mortem examination was not allowed.

Among the many publications that crowd the medical periodicals of the day, it might have been expected that arteritis would have received a larger share of attention, whether we regard it as a primary affection, *sui generis*, or as occurring secondarily in complication with other diseases. Owing to the intimate relation that subsists between the bloodvessels and the fluids circulating in them, and the manner in which they mutually act and react upon each other in states of health, it follows that inflammation of the arteries must constitute a most important link in the chain of morbid actions, and one which is entitled to a fuller investigation than has been hitherto accorded to it. As the subject has been only superficially noticed by writers on surgery, I am induced to offer the following remarks, premising a few anatomical details, a knowledge of which may be useful in elucidating the subject.

The arterial tubes are composed of four tunics:—

1st. An external coat, which consists of a thin cellular tissue, remarkable for its toughness and tenacity. In this tunic fatty deposits and serous infiltrations are never found.

2nd. The proper fibrous tunic, composed of fine circular fibres, arranged side by side in parallel rings, and elastic both in a longitudinal and transverse direction. To this resiliency is due the circular form which the divided extremities of an artery present, contrasting, in this respect, with the collapsed appearance of a cut vein.

3rd. A delicate cellular tissue, which is really only the connecting medium between the fibrous coat and that next to be described. This tissue is, however, next to the external, the most vascular of all the arterial tunics, and that in which the most important of their pathological changes originate.

4th. The internal membrane, which is continuous with the lining membrane of the heart. This membrane, in a state of health, is fine, transparent, fragile, colourless, and destitute of red vessels; but, when inflamed, it becomes vascular and rose-

coloured. Its surface is highly polished, and bedewed with a fine exhalation, which, by its smoothness, diminishes, as far as possible, the effect of friction on the velocity of the circulating current. The middle and internal tunics are as remarkable for their fragility as the external one is for its toughness and powers of resistance, and hence it is, that, when a ligature is tightly applied around an artery, the internal and middle coats are divided, while the outer one remains unbroken.

Although the large arterial trunks contrast remarkably in size with the arterial capillaries, yet the subdivisions between these two extremes of the arterial system are comparatively few in number; according to Haller, not exceeding twenty. As the arteries grow smaller by their repeated subdivisions, the combined area of their branches exceeds that of the trunks, from which they are given off in the ratio 3 to 2; so that the arterial system is said to represent a cone, the apex of which is at the heart and the base at the capillaries. The importance of this arrangement is obvious, as a safeguard against the danger that must otherwise arise from inordinate action of the heart, especially when conjoined with a redundancy of the circulating fluid.

On the other hand, the arteries possess a power of contraction (more remarkable in proportion as the vessels grow smaller), by which their caliber may be diminished almost to obliteration. This irritability in the arteries is said to be identical with muscularity, and is analogous to what is found to exist in the coats of the hollow viscera and in the urethra, in which last canal, although no anatomist has hitherto satisfactorily demonstrated the existence of muscular fibre, there exists, nevertheless, an undoubted power of contractility that answers the same purpose. This contractile power in the smaller arteries subserves an important end in preserving the balance of the circulation, the converse of that described above.

By virtue of this property, when the heart's action is enfeebled, or when the quantity of the circulating fluid is greatly lessened (as in hemorrhages, Asiatic cholera, diarrhœa, &c.), the bloodvessels are enabled to accommodate themselves to the diminished volume of their contents, without which power of co-aptation the circulation could not be preserved.

This power of contractility is due to the large supply of nerves the arteries receive from the nerves of organic life. Around each artery (in an increasing ratio as they grow smaller) a nervous network ramifies, the filaments of which penetrate the fibrous coat, and are lost in the cellular layer that connects it with the lining membrane. The aorta, pulmonary artery, the arteries of the head, neck, thorax, abdomen, and genital

organs, all derive their nervous supply from this source (the ganglionic nervous system), while the arteries of the extremities are supplied from the nerves of animal life in their neighbourhood.

The arteries are also supplied with bloodvessels (*vasa vasorum*), which are largest and most numerous in the young. In states of health these little vessels penetrate no further than the cellular or third tunic; but (as in conjunctival inflammation), so also in inflammation of the lining membrane, red vessels can be distinctly traced into its substance.

Absorbents are not visible on the coats of any arteries except the larger trunks; but the gradual removal of coagula and effused lymph, which is known to take place, proves their existence in every part of the arterial system.

The arterial system of man, the lord of the creation, differs materially from that of the inferior animals, both as regards its proneness to disease and its powers of reparation after injury. Wounds of middle-sized arteries in man are attended with great danger, if left to the unaided efforts of nature; whereas it is extremely hard to bleed an animal to death, even from an artery of considerable size.

Mr. Porter informs us (in his able article[a] on the Pathology of the Arteries) that aneurism is a disease unknown among the lower animals; and that it cannot even be produced in them. The frequent occurrence, moreover, of earthy deposits in the arteries of the human species, at certain periods of life, would appear (when taken in connexion with the foregoing facts) to warrant the conclusion at which anatomists have arrived—namely, that these peculiarities are the result of a difference of structure. It would seem, however, more rational to infer, that the difference of structure (if such there be), as well as its exemption from the morbid states that are peculiar to the human species, are both rather effects than causes, and that they mainly originate in the different habits and modes of life of animals, as well as in the shorter period of existence allotted to them. The lower animals, for the most part, eat and drink only to satisfy nature; and, their wants being few and easily supplied, they escape the evils arising out of the vicious propensities incidental to the more complex life of man, and the unrestrained indulgence of which, by vitiating his moral and physical nature, would seem to predispose to most of the diseases which "flesh is heir to."

The pathological appearances presented by the arteries are

[a] See the Cyclopædia of Anatomy and Physiology, by Todd.

numerous and very diversified in character. This diversity we should *a priori* be led to expect, from the varieties of structure that enter into the composition of these vessels, and from the different degrees of vascularity and nervous power with which they are endowed. The outer or cellular tunic (as we have already observed) is abundantly supplied with bloodvessels and nerves, while the inner ones, in states of health, exhibit hardly any trace of either. We, accordingly, find the results of inflammation very different, according as it attacks the internal or external tunics; in the latter case, the inflammation will be sthenic and conservative in its character; whereas its tendency in the former will be to disorganize and destroy.

In a short treatise (like the present one) it would be out of place to enter into a minute description of the various pathological states of the arteries, which the reader will find detailed elsewhere. It will be sufficient to advert briefly to a few of the most important. Those that are most commonly met with are the following:—1st. Albuminous or plastic exudation, whether occurring on the surface of the lining membrane, or between the coats of the vessel. 2nd. Steatomatous and atheromatous deposits. 3rd. Purulent formations. 4th. Ossification.

When healthy inflammation attacks the lining membrane of an artery, the result is an effusion of plastic lymph, which may accumulate to such an extent as to obliterate the canal of the vessel. This result rarely occurs in arteries of the first or second order, although several instances are on record of the obliteration even of the abdominal aorta. It is, however, principally met with in the main arteries of the extremities and their branches. This plastic material is often found in the cavities and on the valves of the heart, and in the aorta, near the mouths of its secondary branches. In such cases it usually exists in the form of vegetations of a semi-transparent, roundish, pearly appearance, devoid of organization, sometimes soft and gelatinous, but more frequently hard and cartilaginous. It occasionally happens that one or more of these little masses becomes detached by the current of the circulation, and washed into some vessel of smaller size, where it gets impacted, and, by intercepting the supply of blood, may produce atrophy, ramollissement, or gangrene of the distal parts; such accidents have happened in the carotids and iliacs. Effusion of lymph may also take place between the arterial tunics, or in the external coat, in such quantity as to encroach on the caliber of the vessel, and so lead to its obliteration, as happens in the spontaneous cure of aneurisms.

2. Atheroma is the most common of all the morbid changes

of the arteries, and may occur at any age. Erichsen found it in children of 3, 5, and 7 years old. This deposit is, however, more frequent after the middle periods of life. According to Copland, it is deposited in the cellular layer (of Haller) that connects the inner membrane with the fibrous coat; Erichsen, however, is of opinion that this last-named tunic is its proper seat. Its common situation is the arch of the aorta, and near the orifices or bifurcations of the large arterial trunks; it occurs in the form of streaks or patches of a whitish colour, and opaque cheesy consistence, and with gritty particles sometimes scattered through its substance. The deposit is at first firm, but gradually softens down into a pultaceous mass, or into a fluid resembling pus, and containing a large quantity of oil globules. Under the pressure of the circulation on the one hand and the atheroma on the other, the lining membrane gives way, and the deposit is washed away; the little pouch it was contained in presenting the appearance of a hollow ulcer, for which it may be mistaken. Around the margin of these little pouches (which are generally of a roundish form) lymph is effused, which has the effect of consolidating the coats of the vessel, and thereby preventing the blood from insinuating itself between its layers. Simultaneously with these destructive processes of the internal and middle tunics, the external coat becomes thickened by depositions of lymph, and thereby enabled to resist the impetus of the blood circulating through the vessel, and thus provision is made against the occurrence of rupture or of aneurism. While quartered in Jersey, many years ago, the writer had an interesting case in which death occurred suddenly from the rupture of one of these little atheromatous pouches into the pericardium. The seat of the rupture was in the origin of the ascending aorta immediately within the pericardium. The patient was a fine-looking young man (a sergeant in the 59th Regiment), and had enjoyed excellent health up to the moment of his death.

3. Pus is sometimes found between the coats of an artery in the form of little abscesses, which may burst and be followed by ulcers; and these ulcers again may end in rupture or aneurism. Andral found the lining membrane of the artery raised by small abscesses the size of a hazel-nut; and it is probable that many of the ulcers met with in the arteries may be the consequence of the bursting of these little abscesses. Pus is also found on the surface of the inflamed lining membrane, where it alters the quality of the blood, and causes its coagulation.

4. Next to atheroma, in order of frequency, may be classed

the calcareous concretions that are so often met with in the arteries. According to Bichat and Baillie, few people reach the age of 60 years without having formations of this kind in some part of the vascular system. They rarely occur in early life, though instances are not wanting of their having been found in children. These deposits differ from healthy bone in containing a larger proportion of phosphate of lime and earthy salts, with less of animal matter, and in the entire absence of fibres or organization; they are deposited in the same tunic that atheroma is found in, and sometimes project so far into the vessel as to obstruct its canal. In these cases senile gangrene is commonly the result. Calcification is most frequently found in the aorta, although this morbid change may occur in any of its branches. In some rare cases the osseous deposit takes place to such an extent that the whole artery is converted into a rigid, non-elastic tube, and its caliber is so narrowed as to render it incapable of accommodating itself to the varying states of the circulation. If the main artery of a limb be thus altered, and if (as mostly happens) the lower extremity be the seat of the change, gangrene will probably follow; or should the carotids become similarly affected, ramollissement of the brain will be the consequence, leading to still more serious results. Some arteries are particularly liable to this change, viz., the splenic and coronary arteries of the heart; while it is rarely, if ever, found in the œsophageal, hepatic, or coronary arteries of the stomach. All the foregoing deposits have been found in the pulmonary artery, but not at all so frequently as in the aorta and the large arterial trunks issuing from it.

Medical men have been at much pains to explain the occurrence of ossific and atheromatous deposits in arteries, and have spent in barren controversy on the subject much time that might have been more usefully employed. The question is a difficult one, and involves the consideration of that mysterious but inevitable tendency to decay that appears to be the heritage of all material beings, and which has its counterpart in the falling leaf and fading flower[a], not less than in the various forms of animal life that have from age to age peopled our planet, and in succession passed away. When writers attribute these morbid changes to chronic inflammation, they only resort to an asylum ignorantiæ, as regards the true cause. It may be that

[a] This idea is prettily expressed by our National Bard, as follows:—

"Stars that rise and fall,
The flower that droops in springing,
These, alas! are types of all
To which our hearts are clinging."

chronic inflammation, by impairing the vital cohesion of the coats of the artery, *does predispose* it to these changes; but calcareous deposits have frequently taken place in parts independently of inflammation, and, on the other hand, increased vascularity has quite as often occurred in organs without being followed by osseous concretions. Some ulterior cause, therefore, must be in operation, and this cause we believe to be the decay of the vital powers, "that creeps on with petty pace from day to day," as life advances, and which may be recognised by its effects on all the bodily functions, the secreting and assimilating powers among the rest. But other causes concur in producing this result; of these, we believe the most efficient to be the gouty diathesis. This state of the system is always characterized by an excess of urea and of the phosphatic and earthy salts in the blood. The period of life at which it is developed varies according to the habits and constitution of the individual; it sometimes attacks the young, not unfrequently the middle-aged, and often the old; but at whatever age it occurs, its effects are the same, and these are impaired powers of nutrition and assimilation, chalky concretions in joints, atheromatous and ossific deposits in arteries, &c. It is true that, by proper medical treatment and a suitable diet and regimen, these morbid states of the blood may be corrected, and the *vis vitæ* be prolonged; but, after all, it is only a question of time, and, sooner or later, the seeds of decay, implanted in our organization from the first moment of our being, will produce their destined fruits, and fulfil the fiat, "Dust thou art; and unto dust shalt thou return."

There is a close analogy between the diseases of arteries and veins in some respects, although they differ materially in others; and especially as regards the severity of the constitutional disorder that accompanies their inflammatory attacks. Veins are more prone than arteries to inflammation and varicose dilatation, and, as a general rule, inflammation, occurring in them, is attended with greater prostration of the vital powers, and with fever of a more typhoid character. Pus is more frequently found in the veins, and, once existing in them (whether as a result of phlebitis or of absorption from other parts) more readily finds its way into the circulation, and is more rapidly followed by those symptoms that indicate contamination of the blood. Perhaps the larger endowment of nervous influence, which the arteries receive, may modify their susceptibility to inflammation, and, when it *does* occur, impart to it a more sthenic character.

There is a striking discrepancy between the results of in-

flammation attacking these two classes of vessels, which deserves to be noticed. In arteritis, the plastic effusion is washed away by the pulse from the part of the vessel where it is formed, and carried on towards the terminal branches and capillaries, where it clogs the canals of these little vessels, and thus produces gangrene.

In phlebitis, on the contrary, the tendency of the circulating current is to carry the morbid products of the inflamed vessel towards the heart, to be thence diffused throughout the system. This unfortunate result is sometimes prevented by the formation of a coagulum; the plug, thus formed, intercepting the communication between the inflamed lining membrane and the centre of the circulation. Thus, we find that a process which is fraught with danger in arteritis may become a source of safety in inflammation of the veins; and hence the importance, in the treatment of phlebitis, of selecting remedies which have the property of increasing the crasis and coagulability of the blood.

There is another difference between the arteries and veins (interesting in a pathological point of view), namely, that ossific deposits, of such frequent occurrence in arteries, are rarely found in the veins. Nor is their difference in structure enough to explain this exemption; for, according to Andral, there is no diversity in structure between the pulmonary artery and the aorta, or between the cavities on the right and those on the left side of the heart; and yet ossific deposits are much more commonly observed in the aorta and left cavities than in the pulmonary artery and right side of the heart. The difference in the quality of the blood and the peculiarities of the circulation in each, may help to account for the discrepancy.

The causes of arteritis may be divided into those that are of idiopathic origin, and those that act on the frame from without. In the latter category may be included all wounds and injuries, whether the result of mechanical violence or of surgical operations. Among the predisposing causes of the complaint may be specified the following:—The gouty or rheumatic diathesis, and the poison of syphilis; plethora, especially when conjoined with the sanguine temperament, and occurring at the middle or advanced periods of life; repeated epileptic seizures; cutaneous eruptions; disease of liver, kidneys, or of any of the excreting organs, attended with impairment of their eliminating functions; to which may be added the suppression of accustomed discharges; articles of diet which are unwholesome or difficult of digestion; salt meat that has been too long kept, and especially pork; the abuse of wine, spirits, or malt liquors;

and still worse, of the drugged compounds sold under those names. In short, whatever tends to produce excess of the fibrine of the blood, to vitiate its quality, or to impart to it irritating properties, will predispose to arteritis.

Any of the predisposing causes, if intense or long-continued in its operation, may become an exciting cause. The most efficient are acute rheumatism and gout, the metastasis of which from external parts may be followed by endocarditis extending throughout the aorta and arterial trunks; the repulsion or premature disappearance of the exanthemata, and especially of erysipelas, scarlatina, or variola. According to Copland[a], some of the worst symptoms attendant on the secondary fever of small-pox proceed from the effects of arteritis, induced by absorption of the variolous poison into the circulation.

Violent stretching of parts, causing laceration of the internal tunics of the vessels, frost-bite, prolonged exposure to very high or very low ranges of temperature; absorption of pus, or of morbid secretions (as in the puerperal states): or inoculation with animal poisons, as in Case III.; and to these causes may be added intense and prolonged mental emotion, or exhaustion of the vital energy from whatever cause.

Description.—Arteritis presents itself under two forms—the adhesive and the diffuse. The adhesive form is usually of idiopathic origin, though occasionally the consequence of wounds or external injury, occurring in young and vigorous constitutions; healthy lymph is effused from the inflamed lining membrane. This plastic material may be washed away by the pulse from the surface where it is formed, and carried on towards the smaller branches. By degrees, however, it accumulates, and a coagulum forms, which plugs the canal of the vessel as high as the next large collateral branch. The attack may be confined to one artery, or only to a part of the arterial tube; or the inflammation may involve the collateral branches, and spread along their ramifications, until it reaches the capillaries. In such cases, gangrene of the parts that derive their nutriment from the obstructed vessel will follow, unless the anastomosing branches are sufficiently large to admit of a collateral circulation; or unless the progress of the case be so slow as to allow time for their enlargement.

It occasionally happens, when arteritis attacks only a part of the tube, that, as the inflammation subsides, the effused lymph is absorbed, and the canal of the vessel is restored, the blood

[a] See the article on "The Arteries," in Copland's Dictionary of Practical Medicine, to which I am indebted for much information on this subject.

circulating through it as before, and the part perfectly recovering its functions. This I believe to be a rare occurrence, obliteration being the more common result. Prior to the occlusion of the vessel, portions of the effused lymph, washed away by the pulse, become entangled in the terminal branches or in the meshwork of the capillaries. Complete stoppage of the circulation in the part succeeds, ending in gangrene. If the disease be arrested, and the gangrene spreads no further, nature separates the dead tissues from the living, and the mortified part is removed by a natural amputation, the artery, as far as the next collateral branch, becoming converted into a ligamentous cord.

When arteritis spreads along the ramifications of an artery until it reaches the capillaries, the result has been said by writers to constitute "common inflammation." This theory of inflammation is, however, refuted by the fact, that in phlegmon the inflamed tissues are gorged with blood, owing to the loss of contractility in their capillaries; the result is that, if an incision be made into the part, *florid* blood flows freely. But, in capillary arteritis, the minute vessels become so clogged with lymph (the product of inflammation) that there is hardly space left in them for a circulating fluid. In such cases (which mostly end in gangrene) incisions will be bloodless, so far as arterial blood is concerned, although there may be an oozing for a time from the veins, unless (which is a frequent accompaniment) they too become involved in the inflammation.

Arteritis may attack one or more arteries in the parenchyma of an organ. The result will vary with the extent of the inflammation and the size of the vessels affected. If the arterial branch be large, its obliteration may be followed by the death of the part it supplies (as in gangrene of the lung); but should the obstructed artery be of smaller size, or the inflammation be more partial, there will result only a deficiency in the nutrition of the part, leading to atrophy or ramollissement. This lesion is often found in the brain, and may become the precursor of apoplexy, palsy, or other disorders of the encephalon.

Diffuse arteritis is a more formidable disease, as well on account of the greater extent of the vascular apparatus involved, as from the rapid deterioration of the blood and prostration of the vital powers that are sure to follow in its train. This form of the disease commonly originates in external injury, occurring to patients of previously broken-down constitution. It may follow the absorption of morbid poisons, and occasionally assumes an epidemic character in the tainted atmospheres of over-crowded hospitals. It has been observed in cases of te-

tanus, and is a not unfrequent complication of some malignant fevers, especially those that attack Europeans who have recently arrived in tropical countries. It always accompanies diffuse inflammation, with which it may be said to be identical. The inflammation, which is erysipeloid in its character, attacks only the internal coats, rapidly spreading along the arterial trunks towards the heart itself. Healthy lymph is not secreted, but a thin ichor exudes from the inflamed lining membrane, which does not coagulate, but is washed on towards the capillaries. The capillaries in their turn become irritated and inflamed, and the morbid action is propagated thence to the veins, through which the diseased products are conveyed into the general circulation.

Symptoms.—The symptoms of acute arteritis, in its early stage, are obscure, and not easily distinguishable from those of common deep-seated inflammation. They may be divided into those that have their seat in the diseased vessel or vessels, and those which are observed in parts more remote, but which are nourished by them. But, though obscure in its origin, arteritis may be soon recognised by its effects. It usually begins with rigors, alternating with hot skin, thirst, and general pyrexia. There is a sense of heat, soreness, and tension, along the track of the inflamed vessel, which is followed, sooner or later, by disorder in the parts it supplies. When the affected vessel lies deep (like the femoral or tibial), there is no superficial redness. If the main artery of an extremity be attacked, there will be numbness and pricking pain in the distal parts of the limb, which, after a time, become pulseless, cold, dark-coloured, and œdematous. In these cases, there is not only deep-seated pain, radiating in all directions through the limb, but the cutaneous sensibility becomes extreme, and this superficial pain is constant throughout all the intermediate stages of gangrene, until the complete death of the part. When this termination happens in patients of strong vital energy, the line of separation (already described) will probably take place, and after the spontaneous removal of the disease the patient may recover. But should the line not form, or amputation be contra-indicated, the patient will die with symptoms identical with those that attend the diffuse form of the disease.

Attacks of local arteritis may end in resolution; the fibrinous deposits may be absorbed, and the artery be restored to the integrity of its functions; but this termination is exceptional, obliteration being the common result in such cases.

When arteritis is general, and especially if it involve the cavities of the heart, it will be attended with fever of a very

inflammatory form at first, but rapidly changing to the typhoid character. The symptoms in its early stage are those of common inflammatory fever, viz., rigors, followed by heat of surface, lassitude, headach, thirst, and arrested secretion. After a time these symptoms are succeeded by a sensation of burning heat, with soreness in the precordia, and radiating along the track of the great vessels. The action of the heart becomes tumultuous and irregular, with bellows sound and violent throbbings of the arteries throughout the frame. Respiration is hurried and difficult; the countenance anxious and injected, and the skin hot and pungent. The patient cannot sleep, but tosses about with an uncontrollable feeling of distress, which he is unable to localize or define, and which contrasts with the apathy and disinclination to move so constantly met with in ordinary fever. Actual pain is seldom complained of, but an indescribable oppression and dyspnœa about the heart and lungs—amounting to orthopnœa at times. This last symptom was remarkable in some cases that occurred among the soldiers of the 80th Regiment, during the siege of Delhi, and for a description of which I am indebted to my friend, Dr. Irvine, the surgeon of the regiment. Unquenchable thirst is a constant symptom; the bowels, at first constipated, become relaxed as the disease advances, and are attacked in the last stage with diarrhœa or hemorrhage. The secretion of the kidneys is scanty, very high-coloured, and voided with scalding and difficulty. As the disease progresses, the fever becomes more typhoid, and the pulse more rapid, weak, and irregular. Palpitations are frequent, sometimes followed by a purring tremor in the region of the heart, and a tendency to syncope. The colour of skin on the face and trunk is a dusky yellow, while the extremities are mottled with livid ecchymoses or vesications. The tongue, at first moist, and coated with a yellowish slime, becomes, towards the last stage, dry and brown, with red edges, or smooth and glossy. The teeth and gums are covered with dark sordes; hiccup and involuntary evacuations succeed, and the low, muttering delirium is followed by coma, ending in convulsions and death.

Diagnosis and Prognosis.—The diagnosis of arteritis in its early stage is often attended with difficulty, and the danger of mistaking it for another disease in some cases is quite as great as that of overlooking its existence altogether in others. The great arterial trunks are, like other parts of the frame, liable to neuralgic affections, which are accompanied by increased pulsation, acute pain, and bellows murmur. These symptoms ought not to be confounded with inflammation, from which

they are to be distinguished by the suddenness of their accession and departure, and the absence of the constitutional disorder that usually accompanies that state; violent pulsation, moreover, may occur, unassociated with pain, as in the case of chlorotic females, and nervous patients, or those who have suffered from the debility consequent upon large losses of blood. It is a not uncommon symptom in some forms of dyspepsia. The previous state of the patient's health may throw light on the subject, and especially if he has recently suffered from gout, rheumatism, or any of the exanthemata. In arteritis the symptoms are more diffused, and there is not (unless in the local form of the complaint) the concentration of morbid action that, more or less, characterizes visceral inflammations. The complaints most likely to be confounded with arteritis are some forms of idiopathic fever. When it occurs as a sequel to small-pox or the exanthemata, its nature is less liable to be mistaken. It is characterized by a sense of burning heat along the course of the great vessels, accompanied by violent throbbings of the arterial trunks, which are propagated to the smaller branches, and generally attended with bellows sound. On exploring the chest and abdomen, the viscera will generally be found free from disease, except the heart, which is often implicated. When arteritis attacks the main artery of an extremity, the local symptoms of inflammation will soon be followed by coldness, lividity, want of pulse, œdema, and vesications of the distal parts of the limb. There is not the superficial redness that accompanies phlebitis or lymphangitis. Nor has the affected artery the contorted, knotty feel and appearance which are observed in inflammation of the veins.

The prognosis is, for the most part, unfavourable, whether we regard the immediate result (as in the acute form), or the not less formidable consequences that slowly but surely follow the chronic states of the disease. When it supervenes on variola or erysipelas, or when it is produced by the absorption of morbid poisons, the danger is especially great; and the same remark applies equally to the diffuse form of the complaint, in whatever causes it may have originated.

Treatment.—The indications of treatment are as follows:—1st. To subdue vascular excitement and arrest the disease. 2nd. To relieve pain, and procure absorption of effused lymph. 3rd. To promote the free action of the emunctories. 4th. To support vital power. To accomplish the first of these indications, we are taught by systematic writers that general blood-letting is indispensable, the alleged object being to diminish the fibrinous and albuminous elements of the blood, which, in the

adhesive form of the complaint, are always in excess. I concur in the object in view, but entirely dissent as to the means of attaining it. In puerperal females and patients suffering from acute rheumatism, or the exanthemata, the fibrinous and albuminous constituents are in excess, and would continue so, to whatever extent depletion might be carried: but who, now-a-days, would resort to such treatment? I confess that I have long ceased to have faith in phlebotomy as a means of cure; and, whatever may have been its supposed efficacy in by-gone times (when the type of disease may possibly have been different from what it now is), or however numerous the patients who had the good fortune to survive not only their complaints, but the means employed to cure them, I believe there are few enlightened practitioners of the present day who continue to advocate so clumsy, I had almost said so barbarous, a remedy. It *is* truly a heroic remedy,—but, in nine cases out of ten, heroic not for good, but for evil. I deny that it affords any relief in visceral inflammations, that might not with greater certainty be attained by other means; and I assert, from personal observation, that it has sealed the doom of many a patient, who might have recovered if left to the conservative resources of nature.

The excess of fibrine which exists in the adhesive form of arteritis will be most effectually reduced by inducing a free action of the skin, kidneys, and bowels, by means of suitable diaphoretics, diuretics, and oleaginous purgatives, with the aid of diluents and a bland farinaceous diet. The bowels having been first opened with calomel, followed by castor-oil, antimonials, combined with refrigerant salts (such as the nitrate and acetate of potash), and with hyoscyamus in camphor mixture, will be found very useful in calming vascular excitement, and promoting the functions of the skin and kidneys. Effervescing draughts also, with excess of acid, and iced lemonade, will be beneficial and grateful to the patient. But, in the measures we employ to diminish the excess of the fibrinous elements of the blood, we must be cautious not to go too far, which would have the effect of rendering the system unable to check the extension of inflammation by the effusion of healthy lymph, and of thereby converting the adhesive into the diffuse form of the disease.

In local arteritis, which is a very painful complaint, opium will be found a valuable auxiliary. If the main artery of the limb be attacked, the part ought to be kept well raised, and relays of leeches should be applied, followed by hot stupes of decoction of poppy-heads, and poultices of hot camomile

flowers (wrung out of the same decoction), and enclosed in flannel bags. These may be alternated with water-dressing, covered with gutta-percha, or, if the part feels very hot, a refrigerant lotion may be more comfortable. Pounded ice in bladders sometimes affords relief when other applications fail; but, as a general rule, the cutaneous sensibility, in arteritis attacking the limbs, will render the patient unable to bear the weight of poultices.

Absorption of fibrinous concretions will be best promoted by small doses of calomel, combined with opium and colchicum or tartarized antimony, provided there be no idiosyncracy to contra-indicate the use of mercury, and that the vital energy of the patient be not below par, in which case colchicum, antimony, or mercury would be inadmissible. The diet should be low, and chiefly farinaceous, and perfect tranquillity be enjoined, both of mind and body.

It has been already stated that the fibrinous elements of the blood are deficient in the erysipeloid or diffuse form of arteritis, and hence the inability to form plastic lymph, and the tendency to spread, by which this form of the complaint is characterized. In these cases chlorate of potash, camphor, turpentine, quinia, the mineral and vegetable acids, and the more astringent of the metallic salts (viz., the sulphate or sesquichloride of iron), with chloric ether and hyoscyamus, will be indicated, and the strength must be supported with strong beef-tea, jellies, wine, brandy, &c.

In the treatment of blood diseases I am fully sensible of the beneficial effects of medicines, judiciously prescribed; but we must not rely on them exclusively. The human frame is a mysterious laboratory, in which the *vis medicatrix* is the most potent agent, and in which she decomposes and recombines the elements of our organization in a manner which is as yet nearly a sealed book to us. In certain states of the urine, acids are indicated, and in others alkalies. We know that alkalies have the power of diminishing the fibrinous and albuminous constituents of the blood, while the acids and some of the metallic and alkaline salts augment its crasis and coagulability. These remedies ought, therefore, to be prescribed, according to the peculiarities of the case, but with a due regard to the most important indication of all, namely, to support the vital power, which presides over and directs all the functions of the frame, and without whose co-operation all other means are powerless.

Art. VI.—*Practical Remarks upon Stricture of the Rectum, especially in relation to its Connexion with Fistula in Ano and Ulceration of the Bowel; with a new and improved form of Bougie for the Treatment of this Affection.* By Jolliffe Tufnell, F. R. C. S. I., M. R. I. A.; Surgeon to the City of Dublin Hospital, &c. &c.

It is not my intention on the present occasion to enter into a lengthened dissertation upon the pathology of stricture of the rectum, and of the various causes leading to its production; but rather to offer a few practical observations upon its treatment, especially in connexion with the introduction into practice of a mode of dilatation at once simple, effectual, and safe; since any improvement that can be effected in the treatment of a disease so insidious in its approach, so distressing in its effects, and so fatal in its consequences when neglected or overlooked, as stricture of the rectum, cannot, I believe, but be more or less acceptable.

I have personally experienced so much benefit from the employment in practice of the form of instrument which I am now about to recommend, and found it to possess such advantages over all the other kinds of bougie hitherto in use, that I can most confidently advocate its general adoption in all cases where treatment by dilatation is desirable.

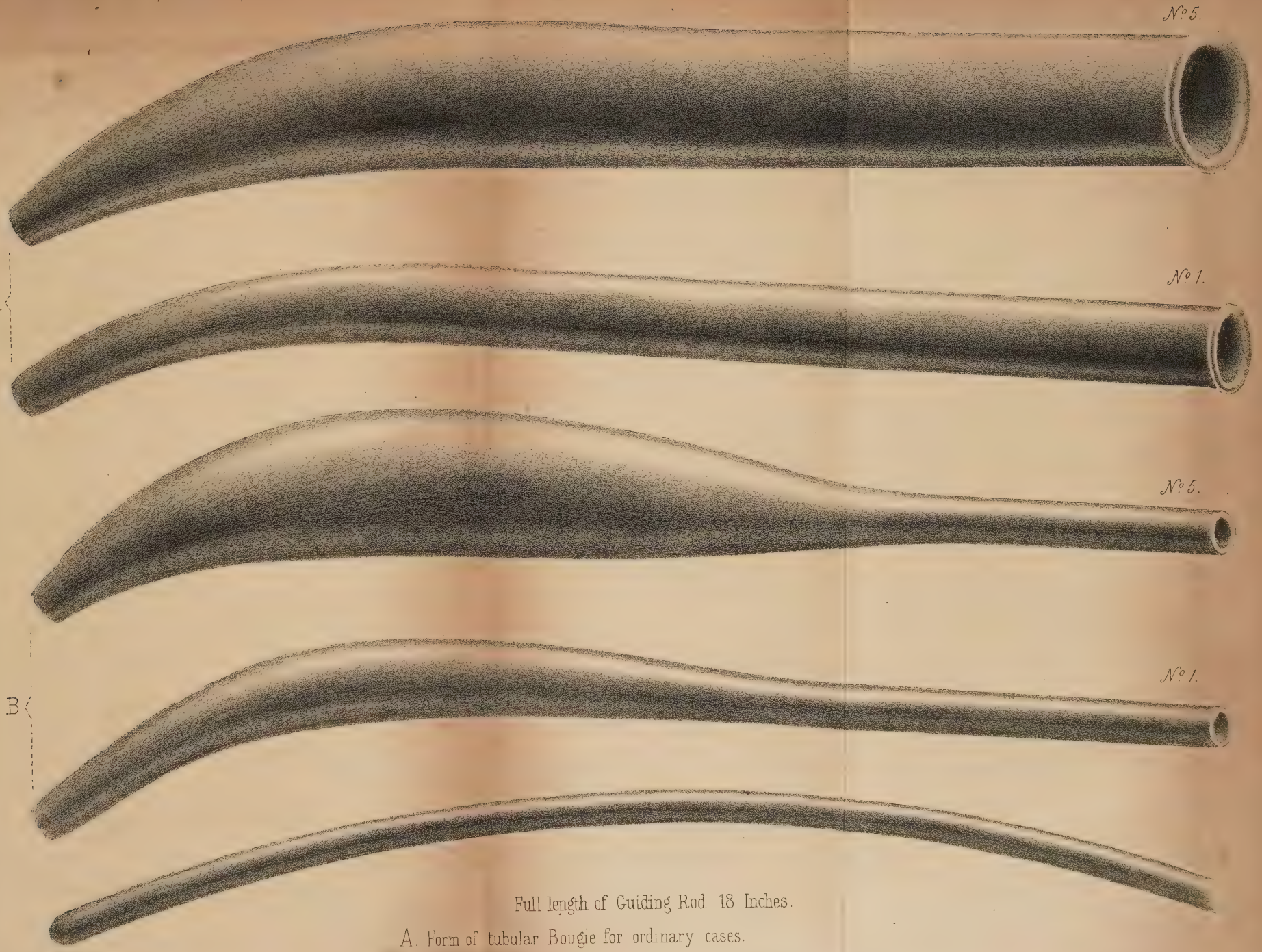
I do not, of course, anticipate favourable results in strictures so highly seated as to be out of direct command; but these are exceptional cases, and, in the vast majority of instances as they occur in practice, the stricture will be found so situated as to be readily amenable to treatment; and, no matter how much the general health of the patient may be broken down (provided the attendant cachexy be not consequent upon malignant disease or phthisis, but the breaking up of the constitution occasioned by the stricture) in every such instance will health be restored upon the disease being overcome. I recommend it, then, for all *accessible* cases of stricture of the rectum, where, as the result of simple inflammation, the disease engages the mucous and sub-mucous tissues with the fibro-cellular coat of the intestine, and where these strictures have become blended together into one firm, homogeneous mass, wholly or partially engaging the circumference of the bowel, thereby rendering it undistensible, and preventing it from responding to that sympathetic action of the bowel which in health induces a regular delivery of its contents.

Whether this state of things be idiopathic, or following upon the cicatrization of one or more ulcers, as occurs often in

the progress of dysentery, is, as regards the mechanical treatment, a matter of no importance; although of vast consideration in reference to the constitutional measures to be adopted. In the present case (that now about to be detailed), I do not hesitate to conclude that the stricture arose as a consequence of dysentery, because this disease, in a severe and chronic form, had pre-existed.

The case itself I shall now proceed to describe, together with the circumstances connected with it, which led me to construct the instruments for its relief which I have figured in the plate attached, and which from experience I can so strongly recommend. The case is as follows:—In the summer of 1858, I was consulted by a gentleman, aged 42, for fistula in ano. His general health was greatly impaired; he was nervous and irritable to a degree; he had no appetite, and what little food he did take, he was unable to digest. He bore the appearance of a man who had suffered from climate, and, in reply to my inquiries as to tropical residence, he stated that he had been in India for some years, but had been obliged to return in consequence of his health giving way. Upon questioning him as to his antecedents, he stated that from childhood he had never been very strong; that he was delicate, and, as far back as he could recollect, had been always suffering from indigestion and derangement of the *primæ viæ*.

In 1839 he went to India, being then upwards of 20 years of age. On board ship he suffered from constipation, and, shortly after his arrival in the country, had acute inflammation of the liver, which was succeeded by dysentery, for he stated that he had frequent discharge of stools of a mucous character, tinged with blood, accompanied by great straining and tenesmus. For this attack (which he himself believed to have been one of piles, but which was evidently of dysentery, in a sub-acute form) he was freely leeched around the anus. He did not, however, permanently recover, and after several consecutive illnesses of more or less duration, was, in 1846, obliged to return to England, and relinquish the position he held. He was now suffering from urgent and frequent calls to stool, with straining of the bowels, and great irritation of the urethra, the alvine evacuations being of scybalous character, and he suffered frequently from rigors. He continued in invalid health, sometimes a little better, but always more or less in pain, until 1857, when an abscess formed by the side of the rectum, which burst and degenerated into fistula. All his symptoms now became aggravated, and from this date until July, 1858, his life was one of continued misery. It was now that I first saw



Full length of Guiding Rod 18 Inches.

A. Form of tubular Bougie for ordinary cases.

B. Form of tubular Bougie for cases which will not tolerate the presence of any instrument which distends the Sphincter ani

Forster & Co. Lith. Dublin.

him. Although dreading the operation, he felt compelled to submit to it, and it was with a view to having it performed that he sought my aid. The shattered condition of his health at this time might have induced a suspicion that he was labouring under pulmonary disease; but careful stethoscopic examination gave no such indication, and the whole history pointed to the alimentary canal as being the seat and origin of his disorder. In consequence of his extreme sensitiveness to pain, and general apprehension and shrinking from examination of the bowel, I deemed it advisable to place him fully under the influence of chloroform, and it was whilst in a state of perfect anæsthesia that I was enabled to make the searching examination which informed me of the full and extensive state of the case. I need hardly observe that the fistula was but a mere concomitant of the more serious disease which existed in the form of organic stricture of the bowel, all but obliterating the canal with the cavity of the intestine below in one mass of ulceration, the membrane almost hanging in shreds. The indication as to treatment was evident; a passage for the intestinal contents *must* be speedily effected, or the patient succumb to the wearying consequences of the disease. The aperture existing in the stricture was so small as barely to admit a fine urethra bougie; it was, in fact, all but closed. Any attempt to introduce an ordinary rectum bougie would have been out of the question, for not the slightest pressure of a continuous kind could indeed have been borne by the patient. Under these circumstances it became necessary to resort to some method that would enable me to *command* the stricture, and for this purpose I determined to adopt a modification of Hutton's railway catheter, or Wakley's urethra tube, and so, penetrating the contracted mass, gain access to the gut above, and evacuate the contents lodged in the intestine, thus obviating the constitutional distress under which he was suffering. I did nothing more at that visit, but, prior to the next, provided myself with the following apparatus:—I took a piece of very fine gutta percha cord, equal in size to about a No. 8 urethra bougie, and in length 18 inches; next, a portion of gutta-percha tubing (just sufficiently large to pass freely over the cord), and, softening one end of this tubing in boiling water, I drew it out so as to make it slide *with a feather edge* over the central rod or guide. In this way I at once secured the command of the stricture, and, by manipulating the solid piece of gutta percha through the stricture with my right hand, guided by the forefinger of the left, and sliding the tubular sheath over, I was enabled to pass unhesitatingly through the narrowed portion

of the gut, to dilate the stricture itself, and also to discharge through the central cavity of the bougie the secretions and excretions which were detained in the intestine above. Each and all of these objects were at once obtained, and the rectum unloaded to an extent which it had not been, I believe, for years before. The progress of the case from this moment was most satisfactory. The bougie thus introduced was passed at first every third day, and allowed to remain in for nearly an hour; after this, every fifth day, and longer retained; subsequently, once a fortnight, and the size correspondingly increased, until an instrument of the dimensions of No. 5 in the illustration passed readily through the stricture.

The general health of the patient rapidly improved, and all the sufferings which he had formerly attributed to the fistula ceased; indeed, the little that its presence really had to say to the case is proved by the circumstance that he has declined to have it operated upon since, preferring to submit to the slight annoyance which it does occasion than to be subjected again to division.

Now, in disposing thus summarily of this case, let it not be supposed that the mere dilatation of the stricture was the only matter considered in the treatment, or that even the mode of introduction and the passing of the bougie are not subjects requiring judgment, and of the greatest importance in the conducting of the case. The remarks upon treatment, general and local, of stricture of the rectum, which I should have to make upon the case now before us, are applicable to almost every other, and, therefore, I shall beg to offer such observations as may bear upon the subject generally. I shall first take the "local treatment," and under this head bring to notice the following essential points, viz:—

1. The form of bougie to be employed.
2. The question as to the administration of chloroform during introduction.
3. The position of the patient during this time.
4. The period during which the bougie should be retained.
5. The after-treatment by injections, plain or medicated.
6. The question of division by bistoury.
7. The treatment of coexisting ulcers of the bowel, and fistula in ano.

Firstly, as to the form of bougie to be resorted to. These instruments, as hitherto employed, have been variously constructed as to material, consisting of wax, gum-elastic, ivory or bone, polished metal and membrane; but all similarly circumstanced in this one respect, viz., that they have had no

central cavity admitting of an artificial exit for the intestinal contents, and entrance for such medicaments as the surgeon may choose to apply to the structures implicated in the disease. It would be a contradiction were I now to introduce an instrument purporting to be superior, and advocate then the employment of any other; but it is not from prejudice or fancy that I recommend its adoption, but from the conviction that in practice every object that can possibly be obtained by the old pattern is equally gained by the new, with additional advantage. Being a hollow tube, no sooner is the central guiding rod withdrawn, than free exit is given to mucus, pus, blood, or other fluid secretion which may be lodged in the pouch-like cavity which exists almost invariably above the stricture; and not only are these otherwise retained, and decomposing matters drawn off and got rid of, but, by fitting the nozzle of a syringe to the free end of the bougie, by means of a coupling-joint of vulcanized rubber, a stream of tepid water may be gently thrown up into the cavity of the intestine above the stricture, breaking up any solid lump of fæcal matter that may be lodged, thereby freeing the patient of the accumulation which forms the main source of irritation, and relieving him from the principal cause of suffering in this disease.

I advise, then, for the reasons stated, the employment of a tubular gutta-percha bougie, of suitable dimensions, and of one or other of the forms depicted in the illustration; the small stemmed for preference, if the bulk of the larger be considered as likely to prove a source of inconvenience, by its distending the anus.

Next, as to the administration of chloroform during the introduction of the bougie. Now, however useful the employment of an anæsthetic may be for the purpose of making any primary or exploratory examination of the bowel, I am satisfied that the subsequent distention of the stricture by the bougie should not be carried on under its use, and for this reason, namely, that an undue amount of injury is likely to be inflicted upon the intestine when the patient is unconscious, which will be afterwards resented by the system; and fever or feverish action may be excited in consequence, from which the health of the individual will correspondingly suffer. So far, indeed, from time being gained, and the process of cure accelerated, it will, in all probability, be materially retarded by so doing.

The plan now introduced affords the means of conducting a bougie safely and *certainly* through a stricture, no matter how contracted the orifice, how tortuous its course, or how diseased the coats of the intestine may be. Still, this is no

reason why its power should be abused. Instead, therefore, of any violence being exerted, the utmost gentleness should be employed in its use. The bougie should be but *coaxed down*, as it were, over the guiding rod, and then through the stricture with a slightly spiral motion, and a steadily impressive force.

Thirdly, the position of the patient during its introduction. Here the sex of the individual must be the determining agent. If a female, the bougie must be introduced whilst recumbent upon the right or left side, as most convenient to the surgeon himself; but if a male, the lithotomy position is to be preferred, because it gives a more perfect command to the operator over the parts concerned, and his power of conducting the bougie and steadiness in progressing it are infinitely greater. As soon, however, as the stricture is passed, and all difficulty overcome, then let the patient turn over upon his side, and lie, warmly covered up, for whatever time may be appointed for the retention of the instrument. I say warmly, because I have found in these cases that (as a general rule) there is an extreme sensibility to chilliness, and that the individual will feel much more comfortable and less uneasiness, if this apparently trivial point be attended to. As for the period of time during which the bougie should be allowed to remain in the stricture, this must be regulated entirely by the patient's feelings, and will, of course, also be influenced by the amount of distention exercised over the stricture. The object is to promote absorption of the effused and consolidated matter encircling and encroaching upon the intestinal tube. To effect this object, the pressure exerted should be *as long continued as possible without causing irritation*, and therefore the motto, "festina lente," should always be borne in mind. Much will be effected by coaxing, whilst but little will be done by force, and the size, therefore, of the instrument chosen should be such as can be passed without giving much pain[a] to the patient, and such as he can retain for a considerable while, an hour at the very least. Much more will be gained at first by the introduction of a single instrument, every other day, for some time retained, than of a large one passed at longer intervals, and only for a brief period on each occasion. The term which is often employed in reference to these cases regarding the introduction of the bougie, that it is to be repeated as soon as the patient has *recovered* from its previous insertion, should be carefully expunged in practice. No introduction of a bougie should ever be permitted

[a] Uneasiness must be expected, and tolerated willingly.

to inflict an injury that requires to be recovered from. In passing the bougie, too, there is much to be gained both in effecting its introduction, and afterwards by the selection of a properly considered medicine for lubrication. Sweet oil is not to be employed if lard can be procured; but, in preference to either, the following ointment should be used:—Powdered opium, ½ a drachm; strong mercurial ointment, 1 drachm; cold cream, ½ an ounce; spermaceti ointment, 1 ounce.

This should be liberally smeared over the extremity of the guiding rod, and over the bougie itself, or, rather, so much of it as will be passed up into the bowel. The object of this combination is to afford to the mucous surface of the rectum the advantages which will be gained from the sedative and absorbent actions of the opium and mercury thus brought into direct contact with the diseased structures, and the uneasiness necessarily caused by the introduction of the bougie correspondingly lessened. The quantity of opium may be increased, but, from the large amount that will be carried in upon the bougie, it is as much as can at first be safely employed.

In other cases the ointment of belladonna, of the pharmacopœial strength, may be employed, but the opiate is that which I prefer.

The period for retaining the bougie in the stricture having expired, the next proceeding is to inject a stream of tepid water through its centre into the rectum above, the amount thrown up being regulated by the patient's feelings, repeating each successive quantity until the water returns clear and free from fæces, thus proving that the intestinal tube is free from lodgment. The injection of water may be followed by that of a small quantity of any astringent solution, which the surgeon, (according to the nature of the case) may wish to introduce into, and leave in, the cavity of the bowel. Thus, in some instances, the infusion of matico, made of double the ordinary strength, or in the proportion of one ounce of the leaves to eight ounces of boiling water, will answer well in tending to assist in contracting in the walls of the pouch-like cavity above the stricture; whilst in others, which are accompanied by much discharge of pus or muco-purulent matter, indicative of ulceration to a considerable degree, the nitrate of silver, increased from two grains to ten grains to the ounce, may be preferred; and, if the surface be inclined to bleed freely, of gallic acid, in the proportion of twenty grains to a wine-glass full of mucilage of gum-arabic. These several applications are to be injected in small quantities, that is to say, not exceeding a couple of ounces, and permitted to remain. By these means a stimulus

is given to the bowel, when unduly dilated, to contract, and to the ulcerated surface to heal in.

It may be asked, however, whether time might not be gained by combining the use of the bistoury with that of the bougie, by notching the stricture upon its internal margin. Such a line of procedure is applicable only to what may be designated as the *pack-thread* variety of the disease. Here it will be useful, and should be cautiously had recourse to; but, for the densely firm, continuous stricture, it is unsuited. Nothing is to be gained by making incisions into the sides of a stricture of this kind.

There is yet another point to be considered, and that is the treatment of those affections which so frequently coexist with the disease—I mean ulceration of the bowel above or below the stricture, and fistula in ano. Of the first of these I have already disposed by recommending the use of topical remedies by injection; of the second, we may say that the stricture of the rectum is the one object primarily to be considered, and until it is removed, and the integrity of the intestine restored, no treatment need be thought of, for, so long as the stricture exists, the fistula, although divided, will not heal. First let the stricture be removed; then, having opened a passage for the fæces, let the fistula be laid open *thoroughly* and throughout. To effect this properly, the patient should be placed under the influence of chloroform, and a bivalve speculum introduced; the rectum is next to be dilated so as to afford a full inspection of its interior, and the fistula should now be divided in its entire length, from the external opening to the inner, no matter where it be placed. If above the stricture, then the bistoury must be carried fully and fairly through it; and, if below, all intervening structures must be severed equally in the same manner, and dressed from the bottom in the ordinary way.

Now, in these cases there is always a risk of hemorrhage; from the depth of parts to be divided, and the enlarged state of the vessels; and thus it is that the employment of the speculum is so desirable in performing the operation. By its medium the surgeon is enabled to *see* the effect of his incision; to watch, as the knife cuts its way inwards, the effect of the division of the parts, and to note whether any vessel of size is wounded, and if, from the bubbling up of blood, he has occasion to anticipate serious hemorrhage, he must take steps to suppress it at once. No time should be lost, for individuals who are the subjects of stricture of the rectum and fistula in ano combined, will not bear any depletion whatever. Before resorting to the operation, therefore, the surgeon should be

prepared for this emergency, and have with him two or three pieces of wood, the size and strength of an ordinary drawing pencil, flattened at each extremity, and with a dossil of lint wound tightly round and secured. This should be dipped in solution of perchloride of iron, and pressure made upon the bleeding point until it cease, when a piece of ice the length of the finger, and about twice the dimensions, should be thrust up into the bowel, the divided fistula quickly dressed with lint from the bottom, and the speculum then, and not till then, removed. I need hardly say that in these cases the surgeon should, in private practice, always take the precaution of having an assistant with him, for it is impossible for any man, unaided, safely to keep up the effects of the choroform, and do all else that is required.

The measures here detailed include nearly all the points necessary to be considered in connexion with the local treatment of this distressing disease and its complications. Let us now turn to the general management of a patient suffering from stricture of the rectum, and other points to be regarded in connexion with the system at large.

These we may class under the following heads, viz.:—

1. Those measures which will alleviate suffering and afford sleep.

2. Those which will improve the conditions of the secretions, which are generally greatly depraved.

3. Those which will greatly increase the peristaltic action of the intestines, and lessen the disposition to scybalous formation.

4. Those calculated to support the general health, viz., diet, exercise, &c.

Now, as to opiates, they are to be deprecated as a general rule, and their habitual employment got rid of as quickly as possible. Often, however, we find the patient to have acquired the habit of taking a very large dose of morphia or opium, in some form, for the purpose of procuring rest at night, and it is very difficult to induce the individual to forego its use. In malignant cases, those affording no hope of recovery, every means calculated to lessen the misery of the patient should be resorted to; and if the individual finds temporary relief from narcotics, by all means let their use be persisted in, and to any degree whatsoever that may tend to reduce suffering and pain; but, in curable cases, opiates, I say, should be employed as little as possible, from their tendency to induce constipation. When ordered internally, I prefer their employment in the form of Dover's powder, given in combination with grey

powder, in very small doses; or, if administered by the rectum, as hard opium in suppository, or the ordinary tincture for injection. From opiate liniments and plaster rubbed into or applied over the parts in the vicinity, I have never seen any real benefit derived; but the former may be resorted to unhesitatingly, as to the fear of any ill consequences from constipation, in the cases of irritable patients, and may, perhaps, be useful as satisfying their wishes, and thus producing a calmative effect upon the individual.

From improvement of the condition of the secretions, and the production of a healthy action of the bowels, the utmost benefit will be derived, and the most unremitting attention must be paid to these points. For the first, the employment of tonics is almost in every case demanded, and especially in those succeeding to dysentery contracted in the tropics; for these cases the infusion of chiretta, suitably combined, will be found extremely useful, seeing that it has a tendency to relax rather than confine the bowels, and at the same time to favour the secretion of bile; whilst its febrifugal properties are calculated to meet any lurking disposition to ague still happening to remain in the system. Taraxacum, too, both in the form of extract and liquor, may be advantageously added to the chiretta, or employed alone. Cascarilla, calumba, and camomile, with many others, may be resorted to; but there is none that, for the cases mentioned, can be compared with chiretta. As an alterative aperient, and tonic, the following will be found generally useful, viz.:—Mercury and magnesia, 10 grains; powdered capsicum, 10 grains; pill of aloes, 20 grains; compound iron pill, 30 grains; glycerine, *q. s.*: divided into 20 pills; and two taken night and morning, or at bed-time only, as occasion may require.

But, with regard to the state of the bowels, whilst urging the necessity of the utmost attention being given to them, and to the regular evacuation of their contents so as to prevent accumulation, I cannot too strongly deprecate the habit which is sometimes adopted, of endeavouring to force the fæces out of the intestines by keeping up a continued purgation. No; the health and comfort of the patient will depend, and greatly depend, upon a point generally overlooked, viz., the keeping of the stools in a pultaceous state, neither allowing them to become hardened or too liquid; for, if scybalous, excessive agony will be experienced in the attempt at expulsion; and, if too thin, tenesmus will follow, with most painful scalding of the rectum. Now, these objects cannot be brought about except by great attention to diet, and to this I would, in the next

place, allude. The diet should be varied in kind, but *limited in quantity*. This is the great secret. The digestion in these cases is weak, and any matters passing undigested, decomposing in the alimentary canal, will give rise to distention of the bowels from flatulence, and occasion excessive uneasiness, if not absolute pain. The quantity of food, therefore, taken at each meal should be small. For breakfast, tea or chocolate, with honey and a little toast. In the middle of the day a sandwich; at four o'clock, fresh, roast, or boiled (but very tender) meat, with a few mouthfuls of well-cooked and tender vegetables; and at seven o'clock a little tea and toast again. This amount of food is ample for any one, if assimilated, and the hours specified would, I believe, be found, upon the long run, as those most suitable for the majority of cases. Fish, from the amount of excrement it produces, is not generally to be desired; but in this respect, and indeed, as regards the selection of food by adult patients, I am inclined to consult the appetite of the individual, for one person will digest an article under the stimulus of taste, and from it make healthy blood, that another could hardly be induced to swallow, and which his stomach would decidedly reject. As to dinner drink, for those who can afford it I recommend the use of *good* claret, either plain or diluted with a little water; but in many cases it is better for the individual to eschew fermented liquors altogether. In this respect, however, every case must be separately considered; no general rule can be applied to all. Special rules, as to clothing and exercise, can, however, be laid down for all. The first should, invariably, both for winter and summer, be warm. The dress may and should be light, but it must be warm. I know no disease, not even urinary fistula, in which the patient is more liable to suffer from cold, or to be more annoyed by frequent chills, than this; and during the shivering, the cutaneous action is arrested, and the internal organs and mucous tissues correspondingly congested. Light but warm woollen clothing should be worn, then, all the year round. As to exercise, it should either be carriage or in a boat, at least until the patient has recovered sufficiently to walk without experiencing pain in the pelvic region, and fatigue. Boating will, in general, be found by far the most agreeable to the patient; and for its enjoyment, at all seasons, coupled with salubrity of climate, I know of no place so suited to invalids of this class as the vicinity of the Cove of Cork. I recommend it in preference to all others.

The consequences of stricture of the rectum, then, being so serious; the tendency of this disease, when once established,

to progress, so sure; and the utter impossibility of its ever spontaneously subsiding, so certain—renders it an affection of all others most desirable to meet and treat at the commencement; because in its early stage it can be much more easily removed than when, from its presence, the secondary complications of fistula, distention, or ulceration, with various other complications, have ensued; and it is the duty of the surgeon to let no false modesty on the part of the patient, or delicacy on his, in the case of the sufferer being a female, prevent a proper examination being made in all cases where the symptoms point to organic obstruction of the gut. It is not merely in cases self-evident, such as fistula, polypus, or prolapse of the bowel, that an examination of the rectum should take place, and the condition of its cavity be ascertained, but in all cases of difficult defecation, or long-continued irregularity of the bowel, for the necessity of a correct knowledge as to the actual state of the rectum is as much needed by the surgeon for the right treatment of its diseases as of the vagina and os in uterine affections, and but little objection is ever made by the most sensitive female to such examination when its object and necessity are explained. The consequences of neglected stricture of the rectum, too, are far more distressing than those which succeed to the ordinary affections of the womb. What then, it may be inquired, are the symptoms which necessitate an investigation into the condition of the bowel? They may be thus summarily defined: dyspepsia, with occasional eructations; headach, and a foul gaseous taste in the morning; a constant feeling of fulness of the abdomen, with constipation or irregularity of the bowels; an unsatisfactory discharge of fæces after the use of aperients, and the return of the fluid, more or less, upon the administration of a lavement; pain in the loins and back, with irritation of the bladder and aching uneasiness in the testicles in the male, and bearing-down in the female. After a while, the discharge of mucus, of muco-purulent, purulent, or sanguineous fluid from the bowel, and the fæces in an unnatural condition, either scybalous, like sheep-dung, in small black pellets, or discharged in thin ribbon-shaped strips. All these symptoms, taken in combination, are certain signs of obstruction of the bowel, but all or each may exist in a modified degree, and when, under the ordinarily prescribed remedies, the symptoms do not yield, it is right in all cases to ascertain whether or no the existence of the cause is dependent upon contraction of the intestine, and, if so, to lose no time in trifling and palliation, but proceed at once to the removal of the disease, by restoring the continuity of bowel.

Of the consequences resulting from stricture, some are much more formidable than others. Thus the hypertrophy of the intestine above is rather useful than the reverse, by helping to force out the contents of the distended pouch, and pass them through the narrowed channel as soon as ever a passage by the bougie has been made; but the ulceration of the mucous membrane of this portion of the bowel is equally obnoxious. This cannot be too soon remedied, as fistula in its worst form, viz., that arising above the stricture, is ever prone to occur so long as the ulcerated surface exists; and these fistulæ,—although they do occasionally (as in the case of a preparation in the Museum of the Royal College of Surgeons in Ireland, presented by the late Mr. Colles) dissect, as it were, a new way for the fæces external to the stricture between it and the surrounding tissues, and open again into the cavity of the bowel below, yet such is an exceptional termination,—in the great majority of instances, when consequent upon the ulcerative action, will extend anteriorly, so as to form direct communication with the urinary bladder, and permit of the fæcal matter being transmitted into it; or else, burrowing through the loose cellular tissues around the rectum, make their way to the surface by the side of the anus or through the nates. The cul de sac, too, or pouch-like development of the rectum, when once it has formed, must continue to exist so long as the stricture which originally caused it remains; and the lodgment of the retained fæces in this pouch will of itself prevent the healing of ulcers, because the retained excrement has now become, as it were, a foreign body, and a direct irritant to the parts, so that reparative action is out of the question whilst it remains.

But of every affection, that which most demands a careful internal examination is fistula. Here, in very many cases (such, for instance, as the one now before us), the fistula alone attracts the attention of the patient. It was for it solely that this gentleman sought relief, and to it he attributed all his annoyances. It is true that contraction of the colon itself, or of the rectum very high up, may occasionally occur, but this is an exceptional case. As a general rule, the stricture is distinguishable by the touch, and, once ascertained to exist, and to be non-malignant in its character, steady and judicious perseverence in treatment local, constitutional, and dietetic, combined, will in almost every instance be successful, and restore the sufferer from a state of absolute misery to one of comfort and enjoyment of life. On the other hand, if this disease be left undetected, the patient must sink beneath the effects of gradually increasing irritation and constantly unremitting

pain; and for these several reasons, therefore, I repeat that in every instance where a suspicion exists as to the possibility of the symptoms complained of being dependent upon organic obstruction of the bowel, a full and careful examination should be made.

Mode of using the Tubular Bougie.—The forefinger of the left hand (previously oiled, and having the interstice under the nail well filled in with soap, as also the dorsum of the nail itself, in order to prevent the lodgment of fæcal or other matters) is to be passed up into the rectum, until its tip is firmly fixed in the stricture or against it, and the extent and density of the contraction thereby fully determined. The point of the thumb is then to be applied to the forefinger close up to the anus, and retained as the finger is withdrawn, thus taking an exact measurement of the distance of the stricture from the anus. The guiding-rod is next to be placed alongside of the finger, and an indentation made upon it with the nail of the right forefinger at the point corresponding to the extreme length previously inserted. This done, the surgeon must next make allowance for the extent of the stricture itself, and to this add a further plus amount of at least an inch for the passage of the rod beyond the stricture up into the cavity of the bowel. In this way an exact knowledge is gained of the length of guiding-rod required in order to secure a certain transit through the contracted portion of the intestine. A distinguishable mark is then to be placed upon the guiding-rod, by tying a piece of fine, but strong, white ligature silk tightly round it, which the elasticity of the gutta percha readily permits of being done, the bougie itself still passing freely over without displacing it. A similar mark is also to be tied round the bougie itself at such point as the surgeon may determine, according to the degree of distention which he may desire to exercise over the stricture. These distances, once noted, permanently remain, so that the preliminary steps here detailed are required only at the first examination.

In using the bougie, the left forefinger is to be introduced up to, and, if possible, into the stricture, and the guiding-rod, well lubricated for the anterior third of its extent, is to be passed along the finger until it reaches the contraction, when, manipulated by the right hand, it is to be entered into the stricture, and through it into the cavity of the intestine above, the requisite distance for its introduction being determined by the silk mark, which is to be left visible just external to the anus. The bougie (having been previously well smeared over with the opiate or belladonna ointment) is then to be placed

upon the projecting end of the guiding-rod, and slid along it through the stricture, its length of insertion into the rectum being determined by the silk mark fixed upon it. The guiding-rod is then to be withdrawn, and all pent-up pus, blood, fæcal contents, or air, allowed to escape through its centre. After the full period for the retention of the bougie in the bowel has been passed, plain or other injections, as desired, may be thrown up, and evacuated or not, at the discretion of the surgeon[a].

[a] These instruments may be obtained at Robertson's, 22, Bachelor's-walk, and at Fannin and Co.'s, 41, Grafton-street, Dublin.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Three Memoirs on Iridectomy in certain forms of Iritis, Choroiditis, and Glaucoma. By Dr. A. Von Graefe. Translated by Thomas Windsor, Esq. London: New Sydenham Society, Vol. V. 1859. 8vo, pp. 247 to 380.

Report of (78) *Iridectomy Operations (for Glaucoma) performed at the Royal London Ophthalmic Hospital, from May*, 1857, *to September*, 1859, *inclusive.* By Dr. Bader. Opthalmic Hospital Reports, Nos. IX. and X.

Discoveries in medical science—consisting of a better appreciation of the true nature of disease, increased knowledge of the properties of medicine, or improvements in the art of treatment, either by medical or dietetic means or surgical operation—are, thank God! made from time to time. Like the facts and statements on which history is based, they, however, require time to test their merits, and establish their claims. For instances in point, either as means of cure, affording relief to human suffering and prolonging life, or for the removal of deformities, we may cite—the generous treatment of fever, the use of stimulants in certain diseases where formerly a lowering plan was observed, the general disuse of phlebotomy, the employment of mercury in inflammations of certain structures, the introduction of chloroform, the division of muscles, the cure of aneurism by compression, and possibly the resection of joints. These are, however, but portions of the wheat sifted from an immense mass of chaff—the chaff of cures not merely propounded for, but the virtues of which would be sworn to in the cure of *incurable* diseases, more particularly of cancer and consumption. We exclude from the consideration of this question the quack advertisers—the Morrisons and Holloways, who trade upon public gullibility with *one* article, knowing that, if properly and determinedly carried out, and with a sufficient investment in advertising, it will and must succeed.

Neither do we allude to hydropathy, homœopathy, mesmerism, clairvoyance, table-turning, spirit-rapping, Turkish baths, Odyle force, electro-biology, and all the other ologies great and small, from the days of Perkins' metallic tractors to the present hour, with which the public of all classes, but particularly those of the higher, choose either to gratify their own peculiar fancies, or to practise upon the credulity or sycophancy of others. Alas! for poor human nature,—disease, suffering, disappointment, despair, will grasp at a sunbeam, or cling to a shadow. The sufferer who seeks relief of the charlatan, when his fate has been pronounced by the legitimate practitioner, is to be pitied more than blamed. The reprehensible parties are the friends of the sufferer who permit, and the missionaries of the quack who spread the delusion. Of the quacks themselves who trade upon the weaknesses consequent upon suffering and disappointment, we have only to say, it is their trade, a gambling more than a commercial enterprise, and their motto is, *Vive la bagatelle!* They know the public will and must be gulled, and, like other sharpers, they see no reason why they should not prey upon the offered spoil. The public mind must be amused, and, while the masses are engrossed with war or politics, particular classes in certain localities find relief to certain innate promptings or cravings in outbursts of theomania, revivals, or miracles of any description, while the sickly and distempered eagerly rush after every novelty which offers. Most of these epidemics may be read in the "History of Popular Delusions;" yet neither are they the cases to which, in this paper, we wish to call attention.

Among the medical memorabilia of the last few years we find cures for incurable diseases, propounded by licensed practitioners, tested in public hospitals with the sanction and sometimes under the patronage of the heads of these institutions, occasionally even favoured by Government. Had we not a lamentable instance of this in our own city some years ago, when a *ci-devant* colonel and an assumed chemist were sent to this country, armed with governmental and authoritative recommendations to disinfect Ireland from fever, dysentery, and cholera—a portion of the great famine-plague which swept over this island from 1846 to 1852—because, forsooth, these charlatans were able to deodorize a water-closet, or correct the effluvia from a dunghill. In our Number for August, 1847, we then fearlessly exposed the humbug of these pretenders, and we flatter ourselves at having somewhat assisted in driving the weavers of the magic scarf from our shores, to try their nostrums in another land, where the head of the firm soon fell a victim to the disease he went to eradicate. We all

remember the story of the British Parliament granting a sum of money to a lady for having discovered a remedy for the stone. Not long since the French Government allocated a ward in the Hotel Dieu to a black doctor wherein to try his cancer-curing experiments; but, to the credit of the French nation, be it told, the trial has ended in the committal of the quack to prison.

The Dublin school has been particularly free from any delusion of this nature, or even that form of it in which the author deceives himself even more than the public, and always more than his brethren. More than half a century has elapsed since the world was told that cancer could be cured with carbonate of iron, or common rust. Since then we have not originated anything in that line, with the exception of a few miserable attempts by certain "nervous doctors," which were soon nipped in the bud by the interdiction of the licensing bodies to which they belonged. That the distinguished man who recommended the rust believed in his cures, no one will deny; but his brethren did not believe in them, though he assured all cavillers that his statements were "simple facts." So in the present day, when argument, reason, a reference to pathology, common sense, or experience, are tried in discussing the question of one of these cures, no matter how performed, the answer thrown in your teeth, along with a plentiful garnishing of epithets about "professional obstinacy, wedded to old opinions, incredulity," and so forth, is, "There is the simple fact; the patient is cured after the most eminent of the faculty had given the case up, sent the person away to die, and would not even give him the chance of an operation." Can we mend this by a diatribe? No; it has ever been and will be the same. All the public censor and critic can do is, now and then, to expose a glaring medical humbug. If any one inquire what good or harm these medical quackeries do, we answer, they are deceptions, proving either want of knowledge or want of honesty, or both, in their promoters. Yet there is money to be made of them, and that their upholders know full well. A cure for an heretofore incurable disease is promulgated—a book is written on the subject—the public press is invoked, and not in vain: without any attempt at dishonesty, or the slightest idea that they are gulled, an editor or two, influenced for humanity's sake by a philanthropic friend, is got to introduce a well-worded paragraph about the cure;—it is then public property, and, no matter how absurd or incredible it may appear, it is copied from periodical to periodical—it is cut out of newspapers, and sent in rose-coloured envelopes from one lady to another—and so the reputation is established, and patients with

anything at all resembling the disease flock in hundreds to the discoverer. It is true, he does not cure them—perhaps he does not know which are curable and which are not, for diagnosis does not come by instinct; he may not be, and in all probability is not, a pathologist; his panacea, or, if he is a knowing man, his remedies, are applied to all comers, and some get well, but not those affected with the "incurable disease." The object, however, is attained—notoriety is achieved, patients are caught, and the remedy is only subsequently resorted to in special instances.

With incurable diseases affecting life, these nostrums have generally but a short duration; not so, however, in chronic or non-fatal diseases, more particularly those of the organs of sense. Not every one is an oculist or an aurist; the higher we rise in the ranks of medicine or surgery, the less its members meddle with cases appertaining to these branches, which are thus, on the principle of division of labour, left in the hands of specialists, who occupy a limited sphere, and, from their knowledge and experience, are the only persons in the profession really capable of appreciating novelty or testing truth in their respective lines. Thus the public are more easily gulled by cures proposed for deafness and blindness than any other ailments. A notable instance lately occurred in London, where many thousands a year were earned by pouring a solution of alum in urine into the ears of whoever was willing to pay for it. Look at the effect of the glycerine cure, which was also exposed many years ago in this Journal. Every one knows that it does not cure that for which it was vaunted, deafness; yet the apothecary daily compounds remedies prescribed by eminent physicians and surgeons for deafness, of which glycerine is the basis. If you ask some of these good men why they think of recommending that or any other such plan of treatment, you receive one or other of two answers—"Well, really I knew nothing better," or "Statements have been made and cures related by honest and credible witnesses, who could have no object in stating what was not a fact; and on their evidence, although I have not seen a cure myself, I order it."

There is another fallacy, and one of which the profession should be aware: fashions, no matter in what—in religion, politics, architecture, literature, farming, as well as dress—partake of the nature of epidemics. They have their early struggles against doubt, opposition, and previous tastes (facts have nothing to do in such matters); then their general acceptation, when everybody believes everything, where arguments are useless, and where, again, facts, no matter how patent, are not believed;—until the bubble bursts, or the froth goes down,

and no more is heard of the subject. So in medical fashions; it is only when the epidemic is on the wane that sane men are listened to, and the truth begins to appear.

Another mode in which the medical public is influenced in such matters is of modern introduction. Formerly, men wrote books, published essays in periodicals, delivered a series of lectures which were printed in medical newspapers, or recorded remarkable cases. Now, our weekly journals abound in reports collected, perhaps, by but moderately educated men, and even students, of what falls from a physician or surgeon as he passes from bed to bed, and of that desultory nature which is never intended for publication; with these are interlarded the skeleton reports of cases, the result of which never meets the public eye. We have reason to believe that these proceedings do more to depreciate than to elevate medical literature. We should not, however, allude to them here, but that they form part of the machinery by which new-fangled remedies are placed before the medical public—not before men, like ourselves, behind the scenes, or who are engaged upon the literature of the time; but the public, composed of the country and provincial practitioners, who have but little time to analyze critically such cases, and who, seeing that such and such a case under Mr. So-and-so "was greatly benefited," is "considerably improved," and "is doing as well as could be expected," or is "rather better since last report" (no previous one having been published), is anxious to try the remedy on Mrs. So-and-so, whose symptoms correspond; or, if the remedy is beyond his reach, to send the patient to the metropolis for operation.

Do not the public find all this out? Many do not; and those who do, strongly recommend the use of steel traps to their brother foxes who may not yet have lost their tails. Nothing pleases a certain class of patients so much as to be talked about—to think that their disease is in any way peculiar. They are elevated from the martyr into the hero; they boast to you that the new doctor said, in the words of our own epigrammatic Brennan, that their case was

"The worst he ever saw—save one."

Even although they are no better, they become the fast friends and most indefatigable missionaries for the new system and its professor. If you meet one of them, and ask is he really cured, the answer is, "Well, I can't say I am much better; but that is because I did not go soon enough, or try the system long enough; circumstances prevented me remaining any longer under treatment," &c., &c. These are not fancy sketches.

Who is there in extensive practice who has not encountered such people, and observed such conduct? The pertinacity with which the patient and his friends,—when they have thrown over the old family attendant, the kind, skilful, generous, judicious friend of years, for the quack, or for quackery of any description,—will try and persuade you that they are cured, would be amusing if it were not so lamentable. They will lose their temper with you if you hint that they are no better than they were, and attribute to the "well-known prejudices and illiberality of the profession" your reminding them of the opinion you gave some years before they had sent a lock of hair in a silk bag to a Madame or Mademoiselle to supply them with a pathological horoscope on the state of their liver or stomach.

These observations suggest themselves to us upon consideration of one of the last innovations in special medicine—iridectomy in glaucoma. It is right to tell our readers that the term iridectomy is simply the making of an artificial pupil, or enlarging a natural one by that method in which a portion of the iris is cut out, an operation first recommended by Reichenbach in 1767, and shortly afterwards performed by the elder Wenzel, and which is known in books under the name of corectomia or iridectomia. As employed by the modern iridectomists, it means making an aperture either in the cornea in front, or in the sclerotic behind the ciliary attachment of the iris, withdrawing a portion of that texture, and cutting off from a fifth to a third of its circumference; there is, therefore, nothing new in the operation, except, perhaps, the amount of iris removed.

The definition of glaucoma is not, however, so satisfactory; and, thanks to the scribes who have been engaged with the recent *glaucoma epidemic*, one hardly recognises it as the disease known to our forefathers as non-cerebral, but generally total amaurosis, with partially dilated pupil, insensible to light; colour of iris either natural or assuming a slaty hue; parts within the pupil of a sea-green muddiness, sometimes partaking of a bluish tint; congestion of globe manifested by turgessence of external veins; in some cases hardness of globe, but this is a very variable symptom. This disease occurs most frequently in aged people, and more commonly in females than in males; it first attacks one eye, and generally seizes on the other subsequently. That is what we know by glaucoma; coming on slowly, and being unattended with the manifestations of inflammation, it may be called chronic glaucoma. In process of time the lens frequently becomes opaque, with slight irregu-

larities of pupil; hence Tyrrell's definition of "glaucomatous cataract." The disease in this stage is generally painless. The term "acute glaucoma" has been applied to a peculiar form of arthritic internal inflammation of the eye, arising suddenly, attended with great pain and total loss of vision, and having its principal seat in the iris, choroid, and retina, without much effusion of lymph; pupil generally dilated, and loss of choroidal pigment frequently occurring during the progress of the disease. Like the former, it is nearly always fatal to vision.

In the foregoing description we have endeavoured, without too great minutiæ, to be as simple, general, and, at the same time, as forcible as possible. Without entering into an archæological history of the disease, let us take up the writings of half a dozen good practical men, and see what their ideas have been upon the subject. When ophthalmic surgery made a burst about 130 years ago, glaucoma and cataract were considered synonymous, the seat of the latter not being then well determined. Shortly after Brisseau demonstrated the pathology of cataract, our own countryman, O'Halloran (whose labours we brought under the notice of our readers in vol. vi. of this Journal), wrote one of the best books on the subject of what was known in his day as the "glaucoma or cataract." The learned Mackenzie has reproduced in a concentrated form the opinions of most authors, ancient and modern; Dr. Hayes, of Philadelphia, in his edition of "Lawrence's Treatise on the Diseases of the Eye," published in 1847, has added some other authorities; while Himly brings together all the ideas of the continental writers upon the subject. The true pathology of the disease has not been very well made out. At first it was believed that there was a "scum" behind the pupil; then that the seat of the disease was in the vitreous humour, which became green; then it was supposed deposits took place in the vitreous body. Others, and with reason, attribute the greenish reflexion to the want of pigment in the choroid. Lastly, the ophthalmoscope has been brought into use, and finds a hollowed or cupped appearance in the entrance of the optic nerve, a peculiar condition of the retinal vessels within the limit of the papilla, and pulsation in the arterial trunks. Edward Jaeger first pointed out some of these peculiarities; but long before he wrote Mackenzie had noted a change in the retina, and in dissection found no trace of limbus luteus or foramen centrale. The matter stood nearly thus until about four years ago, when Dr. A. von Graefe, of Berlin, published some essays upon the subject in the *Archiv für Ophthalmologie* wherein he attributed to intra-ocular pressure the condition of the optic

nerve, the hardness of the globe, and also, by producing paralysis of the nerves supplying the iris, the dilatation of the pupil. That there is increased secretion of both aqueous and vitreous fluid in certain diseases of the eye, all will admit; and that this increased bulk within the globe must, by pressure, affect the retina and choroid, no one can deny; but whether it was the original cause of the alteration in the optic nerve, in either acute or chronic glaucoma, has not been proved.

That the evacuation of the aqueous fluid, and possibly some of the vitreous with it, will give prompt relief in certain forms of internal inflammation of the eye, every ophthalmic surgeon is well aware. There is nothing new in that procedure The broad needle, introduced through the cornea, and given a slight turn, so as to evacuate the aqueous fluid, will give immediate relief to sufferers, and in an incredibly short time restore the brilliancy and transparency of a cornea that had already become gray, and was fast hastening to destruction. Many a case of extraction we have known to be saved by separating a portion of the section when inflammatory action had set in. Fifty years ago Ware and Wardrop recommended and practised the evacuation of the aqueous fluid in corneitis and aquo-capsulitis. Shortly before his death Mr. Dalrymple held the opinion that certain cases of amaurosis, attended with choroidal complication, might be relieved by inserting a broad needle obliquely into the eye, in the hope of lessening the bulk of a fluid which he thought existed between the sclerotic and choroid, and pressed the latter on the retina. With this intention he operated ineffectually two or three times on Mr. M., of this city, whose case was recorded in this Journal many years ago. Every one who has to treat cases of staphyloma knows that immediate relief is afforded by tapping the projection, as recommended in this Journal for February, 1847.

But then, we are told it is not the mere letting out of the vitreous or aqueous fluid, but the cutting out of a portion of iris, that relieves the pressure and effects the good. We are stupid enough not to see this in the same light as our neighbours. No doubt, a wound made for the removal of a portion of iris, even if none of that membrane remains in it, will not close so accurately nor heal so quickly, as a puncture made by a broad needle; but if the pupil is free, the iris cannot by its presence or its bulk exercise any pressure on the optic nerve. We are, however, entering upon the discussion of a subject the advocates of which answer us by an appeal to facts—the published records of the cases, with the number of cures, and, therefore, there is no need to argue the question.

There never was, perhaps, any theory or operation taken up so quickly, spread so widely, or upheld so firmly, as the cure for glaucoma; certainly, none since Stromeyer's recommendation, and Dieffenbach's operation, for the cure of strabismus, with, perhaps, the exception of cutting a wedge-shaped piece out of the dorsum of the tongue for the cure of stammering—another Berlin discovery. Before we come to the question of the general utility of iridectomy in glaucoma, even if successful, it is worth inquiring how the epidemic spread so rapidly. We believe the answer is chiefly to be found in the man. Graefe, son or grandson of the celebrated baron distinguished in Prussian surgery, one of the tribe of prophets, the natural heroes of idol-worship who ever collect disciples, and always inspire them, while others only teach; young, handsome, long-haired, dark-eyed, clever, kind, hospitable, winning, the word of such a man is law; his knowledge is great power; his opinions are regarded as revelations; his statements are never questioned. Such a man was Liston—noble, generous, commanding, as well as able. We could include in our list some of our brethren of the British isles, men of high faculties, originative, discursive, insinuating, bold,—were such a course warrantable in a review. Minor prophets there are, chiefly of the bullying class—prophets to their patients, not of the sympathetic variety, but men who rudely command and obtain a servile obedience. Neither the profession nor the public are aware of how many Rareys there are in the world besides the horse-tamer. Not quite twenty years ago, an English watering-place rose into high repute, owing to the tact, knowledge of human nature, and eccentricity of a "walking doctor." Well, the pupils of Graefe took up the glaucoma, and carried the precious bantling to London, where it specially throve in the Moorfields Hospital, the scene of the labours of Saunders, Farre, Travers, Lawrence, Tyrrell, Dalrymple; and from thence we heard through the pages of the weekly London press, and of the special periodical appertaining to that Institution, of the operations performed, and the cures effected in cases of chronic and acute glaucoma. Slight discussions, it is true, arose among the new sect respecting the pathology of the affection and the mode of cure, as well as the method of operating; but all were agreed as to the general utility of Von Graefe's treatment. True it is that no man of any mark in London, either special or general surgeon, came forward, and in lecture, essay, or book, fearlessly stated his opinion and related the cases in which, either in acute or chronic glaucoma, he had by iridectomy restored the lost sense. No; the epidemic spread by more subtle means;

the disciples of the prophet or the votaries of the system wrote it up and produced the excitement, while, with few exceptions, the operators themselves put forth nothing under their hand and seal. It was considered ignorant and prejudiced, absolutely offensive, in this country to question the propriety of the operation, or the statements as to the results. The proverbial slowness of the Irish school of medicine to accept new truths was thrown in our teeth; and half-caste doctors, after finding that iridectomy for glaucoma was not performed either at the City of Dublin or St. Mark's Hospital, went about saying that the Dublin Ophthalmic School was the lowest in Europe.

What benefit arose from all this? A very manifest one; the New Sydenham Society, in its last volume, published Von Graefe's three memoirs on Iridectomy which form the subject of the present review. Was not that a benefit to the members of a society, who, for neither love nor money, could procure a copy of that fine old work, John Woolhouse's treatises on the Eye, or Bannister's book, and other essays on the diseases of the organ of sight which we might refer to!

When the novelty was fresh, our statistical notions of ophthalmic diseases were a little perturbated at hearing of the number of cases of glaucoma which were operated on. We thought the disease a rare one, in any of its forms, but especially in the chronic. On looking over the patients in general or special hospitals, in passing through workhouses, and inquiring into the pathology of inmates of blind asylums, or examining into the published tables from ophthalmic hospitals, we find the disease to be a rare one. Well, as we looked more narrowly into the records of the new cases, we found they were not cases of glaucoma at all—certainly not according to the standard laid down by the best authors, and accepted by the most practical teachers. The young gentlemen who were twaddling (if we may use the expression, and they will agree with us in its applicability ten years hence) on this subject were evidently, but indifferently educated, we mean as oculists, and were writing about what they did not understand, employing a jargon of which they scarcely knew the meaning, and doing but indifferent justice to themselves, the subject, or the operators they were reporting. If questioned, they referred to the opinions of the prophet, and, like the microscopists a few years ago, they ignored the *tactus eruditus* of the old experienced surgeon, and boldly referred you in confirmation of their views to the established diagnostic results of the ophthalmoscope. Cases of amaurosis, no matter from what cause, and all the results of

arthritic or other internal inflammations of the eye, were jumbled together in the most charming confusion by those ephemeral pathologists; every disease was called glaucoma; and we saw several cases in which iridectomy had been performed, where the amaurosis was produced by floating retina; and also where there were closed pupil and green iris bulging into the anterior chamber from oft-repeated and long continued choroido-iritis—which no good surgeon would have thought of meddling with. On the other hand, we have reason to know that Graefe has operated for iridectomy in cases of impaired vision, when the patient could absolutely see to read moderate-sized print.

While all this was proceeding, was there no voice raised against it? Yes; for the honour of our school be it told, the "Dublin Medical Press," edited by a venerable ophthalmic practitioner, at once, and in the terms, and with the pyrexile energy peculiar to that publication, did openly and fearlessly denounce the glaucoma dodge (see the number for February 10, 1858), and from time to time since has exposed the delusion. Nevertheless, it still has its votaries; and others are beginning to claim credit for priority in the glaucoma cure. Mr. Middlemore recommended the evacuation of a portion of the contents of the globe, through an opening into the sclerotic, nearly thirty years ago; and Mr. Critchett, one of the able surgeons of the Moorfields Hospital, had performed iridectomy so early as 1854 (see his lecture in the "Lancet" for September 9 of that year, and his practical essay on the treatment of acute glaucoma, published in the Ophthalmic Hospital Reports for January, 1858). But neither of these, nor any of the other practitioners we have mentioned, were prophets, and so failed to acquire the celebrity due to this great discovery. So convinced were the editors of some English periodicals of the great value of the Graefean operation, that we knew an instance in which a London journal absolutely refused to insert a communication criticising the so-called cures of glaucoma, even after the paper had been in type.

As yet we have not had any *cures* recorded in this country, and therefore, when requested by the editor of this Journal to write a review of the subject, we had collected a series of cases recorded in England, for the purpose of analysis; but we are saved the trouble, for in the last number of the "Ophthalmic Hospital Reports" the murder is out, and Dr. Bader presents us with a resumé of 55 cases, in which 84 (not 78) eyes were operated on; and in a table attached to his Report the following results are acknowledged:—19 were cases of chronic, 20 of subacute, and 16 of acute glaucoma. The statistical

table is peculiar, and differs from most documents of its kind in not giving either the age or sex of the patients. In 29 persons both eyes were affected; in 18 the right, and in 8 the left eye only was affected. In the second column is registered "how long before iridectomy began to use convex glasses;" the object is not stated, but it is remarkable that only 7 of these cases had not used spectacles. From the entry in this column of persons having worn glasses for 10, 20, 25, 30, 40, and even 51 years, we learn that most of these patients had been more or less presbyopic. It also gives us some inkling as to their probable ages.

The two last columns present us with the amount of "vision immediately before iridectomy," and the result, "generally the second or third week after" the operation.

In one case it is magnanimously acknowledged that a patient who had only "perception of light and of shadows" was "hardly as good as before" the operation. In 32 operations the eyes remained "as before." So runs the record; but whether any of these suppurated, softened, collapsed, or enlarged, and were rendered unsightly, is kept, like the cases themselves, *out of sight*. In not one instance of chronic glaucoma was vision restored. In what is called subacute glaucoma, 3 of the recorded cures could "read large type" before; and after the operation could read "average type;" but, whether with or without glasses, is not specified. In acute glaucoma (symptoms not given, but may be set down as those of general internal non-suppurative inflammation of the eyeball—probably rheumatic or gouty—a disease in which paracentesis has long been employed), we read of the greatest amount of success. Five eyes would appear to have been benefited so far as to read, but whether the improvement remained after the third week, is not stated. In one of subacute disease, it is thus recorded before the operation, "can see (not to read) large letters;" and after the operation, "reads large letters, and tells the time on a distant clock." In the first case of acute glaucoma operated on, the eleventh day of the inflammation the patient had a "fair perception of shadows," and afterwards could read "average type;" but what description of type the reporter means by average is not mentioned, which, now that ophthalmologists have begun to state distinctly what kind of type they refer to, whether brevier, primer, pica, &c., is to be regretted. In No. 2 the person could "recognise small objects, such as keys." No. 3 had "perception of light and shadows." No. 4 could "count figures;" and in No. 5 it is acknowledged vision was returning, and the patient had "perception of large objects." Whether

these five cases, if treated in the ordinary way either by depletion, mercury, bark, potash, counter-irritants, or even ammonia and stimulants, might not have regained a similar amount of vision, is a question worth consideration. Are there not lots of cases treated daily by surgeons, both of specific and non-specific internal ophthalmia, where the patients, during the violence of the attack, lose vision altogether, and are subsequently able to read even small type?

But, we may be asked,—although many patients in Dr. Bader's schedule were not restored to anything like useful vision, were they not greatly benefited? Yes; this is said to have been achieved; persons who had "perception of shadows" were made to have a "perception of light;" and some who had only the "faintest perception of light" were, by a removal of a portion of iris, made to see "fair perception of shadows." This we acknowledge;—mighty achievement of ophthalmic surgery! Again, those who had a "faint perception of shadows" were enabled to "recognise the hand;" but whose hand—their own or the surgeon's—is not stated.

Again, we are gravely informed that in a case of chronic glaucoma, with gradual loss of vision coming on for seven years, the person had "perception of shadows," and by operation obtained "faint perception of light." How a man is to perceive shadows, who does not perceive light, Dr. Bader does not explain. Now, on this subject we have a word of warning for our juniors. Blind people have a phraseology peculiar to themselves: for instance, "Can you perceive light?" The answer is, "Oh! yes; I can count the bars in the window;" although the poor sufferer really does not know where the window is. "Can you see any object?" The reply is, "I can see and count my fingers, and tell the colour of my skin," holding up the hand. "Well," says the surgeon, "touch my finger;" not a bit of it; he does not even know on which side the hand of the surgeon is. Furthermore, it must be a very badly disorganized eye indeed, that is not conscious of the hand or any dark object passed before it. Such cases are daily presented to the ophthalmic surgeon, who never dreams of operating on them. Poor, dark people craving for a ray of light will try and persuade the surgeon that they have sufficient sight to warrant the performance of an operation, and this every man of experience knows full well.

Dr. Bader deserves credit for the publication of this table, and fairly acknowledges that "those cases which were complicated with chronic iritis, or in which escape of vitreous, &c., followed the operation, are not included in the present Report."

But valuable and honest, though late, as this admission is, it was scarcely needed, for, more than fifteen months ago, and during the very height of the epidemic, Mr. Dixon, senior surgeon to the London Ophthalmic Hospital, and a thoroughly honest, practical man—whose cases, by the way, were vaunted as cures two years ago—has thus written in the last edition of his valuable "Guide to the Practical Study of Diseases of the Eye:" "The announcement that a simple and easy operation could arrest or cure a hitherto uncontrollable disease was sure to attract attention, ... was published by Graefe in the German Ophthalmic Journal, and was also brought before the Ophthalmological Congress which met at Brussels in 1857. When the nature of the operation came to be explained, one could not fail to be struck with the apparent absence of all casual connexion between the morbid changes of glaucoma and the means proposed for arresting them. How was general hyperæmia of an eyeball, and the consequent changes of its tissues, to be overcome by cutting out a piece of the iris? No satisfactory explanation as to the *rationale* was offered. We were told that '*intra-ocular pressure*' was the cause of all the phenomena of glaucoma, without any very clear account being given as to what was pressed, or what effected the pressure; and we were assured that the removal of a piece of iris by taking off the pressure would bring about restoration of sight.

"The facility with which the operation of iridectomy, as it has been called, can be performed, has led to its being practised in an immense number of cases; and were we contented with the array of so-called cures which have resulted, we should indeed believe that glaucoma, hitherto so hopeless a disease, had been brought as much under control as cataract itself; but a careful criticism will convince us that many of the 'cases of acute glaucoma, cured by operation,' were simply cases of acute inflammation of the sclerotic, implicating to a slight extent the iris and cornea, and attended with severe neuralgia and impairment of vision,—cases which would have yielded to judicious treatment, if no *iridectomy* had been performed. A few cases, supposed to be chronic glaucoma, were probably nuclear cataract in an early stage, and the removal of a portion of iris, by exposing the still transparent periphery of the lens, improved (of course, only temporarily) the patient's sight. Of other instances which have come under my own observation, where the operation has been unsuitably performed or proposed, I forbear to speak." Mr. Dixon adds:—"For myself, I may state that, although I could not recognise as sound the theory upon which the operation was brought forward as a cure for glau-

coma, I tried it in a series of carefully selected and well-marked cases of the following forms of disease:—'Amaurosis with excavated optic nerve,' as Graefe has termed a peculiar morbid condition; chronic glaucoma, where the lens had not yet lost its transparency; and in cases of acute glaucoma, characterized by sudden impairment of sight, rapidly followed by inflammation of the eyeball, dilated and fixed pupil, severe neuralgia, and total loss of vision. In neither of the first two classes did I find, nor had I expected to find, any improvement to result. Nor in the third class was sight restored; but the inflammation seemed to be arrested, and the neuralgia was either very much lessened or it wholly ceased. I cannot, however, attribute this result to the removal of a portion of iris, but mainly to the evacuation of the aqueous humour through the large corneal wound." Such is the matured opinion of one of the men who performed several of the operations referred to in Dr. Bader's Report.

Another peculiar psychological phase of eye disease is that in which the patients occasionally exaggerate their defects, and will not acknowledge the amount of vision they possess; unhopeful, dispirited, and desponding by nature, they put but little faith in Providence, the doctor, or themselves, and, with a morbid craving for sympathy, engrafted on innate selfishness, they become ophthalmic dyspeptics. If such persons are surrounded by weak friends, they become confirmed valetudinarians. They can talk of nothing but their ailments; they gravely, and without appearing to be conscious of the misstatements they are making, tell you they are quite blind—in total darkness—can do nothing; yet, if watched narrowly, their acts belie their words. If the practitioner rises to leave, and says, "As you can't see at all, I cannot be of any use to you," they will soon turn round and display an extraordinary amount of vision. In other instances it may be necessary to produce this admission by a more round-about way, and, adroitly taking them off their guard, bring them on to see this and that object, and, in fact, to make themselves disprove their statement. This is not always a very gracious task, especially if obliged to be performed in the presence of watchful friends, willing to side with the patient. We know of a case in point, in which such a scene took place about a year since. A lady, aged 64, residing in Dublin, had, while staying in the country, an attack of rheumatic iritis, many years ago. The choroid was in all probability affected, as the loss of sight could not be accounted for by the amount of mechanical impediment present; in both eyes there was some attachment of the iris; a slight tag in the

right, but considerable adhesion of the pupillary margin of the left, with whitish opacity of the lens capsule; the ordinary posterior synechia, and partially closed pupil. Such was her state when seen by some practitioners in this city after the subsidence of the attack, and such, we believe, is more or less her present condition. The use of atropia, such internal remedies as improved her general health, and an occasional chat with some of her medical attendants, got this lady over many years, able to help herself in all respects, although now and then getting a fit of despondency, and complaining that she was blind. A few years ago her defect of vision became increased by incipient cataract in her good eye; opacity of the lens of the usual greenish-amber hue common to such cases. She was then promised that, if she lost her power of recognising objects and finding her way, an operation for removal of the cataract would, if she wished, be performed; but that, so long as she "did not knock her face against the wall," an operation would not be justifiable in a diseased eye like hers. With respect to the other eye, the most which could be done would be to form an artificial pupil by detachment of the ciliary edge of the iris on the nasal side—an operation which those who have observed the practice in St. Mark's Hospital for some years past must have seen frequently performed, and often with success. The amount of vision which may be obtained by such a procedure, let it be ever so successful mechanically, can never be predicted. It depends, not on the dexterity of the operator, but on the state of the lens, choroid, and retina behind the newly-made aperture; and where patients can find their way, cut their meat, and know their friends with one eye, it is scarcely justifiable to subject them to an operation on the other, with more than the ordinary chances of inflammatory action being set up. Such was this lady's state when the two great ophthalmic wonders of the age—the ophthalmoscope and the glaucoma cure—were presented to her. It would be contrary to the tenor of the human mind, especially in such persons, to forego the chance of relief held out to them. In such a case it is right to observe, the ophthalmoscope tells us nothing; there are sufficient outward and visible signs for the surgeon to form an accurate diagnosis; and the only object which could be achieved by an ophthalmoscopic examination—that of learning the precise state of the vitreous body and retina—must be nugatory where the lens itself is opaque.

Friends objecting to the new operation, a consultation between Dr. Adams, Dr. Wilde, and her family attendant, Mr. M'Munn, was called. The poor lady, anxious to make the worst

of her case, in the hope of having the operation performed, sat on a sofa and declared herself in darkness—unable to see anybody, or anything, or to know one colour from another—not able even to find her way up stairs, &c. Well, after some little tact on the part of the medical men, her spirits revived, and vision came to her so far as to be able to get up and walk directly to the door and put her hand on the handle—then to see the faces of her friends—afterwards to point out every tint and shade of colour upon a parcel of worsted-work doylies which happened to be presented to her in succession. Then Dr. Adams, taking her to the window, got her to admit that she saw persons passing on the opposite side of the street, and could observe the brass plate and knocker on the opposite house—the street being a wide one. Curious to relate, Dr. Adams, who is in the habit of noting his cases, made a memorandum of this circumstance, and his letter to that effect is now before us. But that was not all: the lady was questioned as to her ability of cutting her meat and feeding herself, and, confessing to a partiality for corned beef which she ate the day before, was rather indignant at being asked whether she ever missed the mustard on her plate. All this occurred in the presence of the lady's relatives who were rejoiced to find that matters were not so bad as they anticipated. The united opinion and advice of the medical men present (and in the latter her son concurred), was this—that she might have an operation performed on her "bad" eye if she liked, but, as any real, substantial, permanent benefit was not likely to accrue from it, they themselves declined operating, so long as she could, with either eye, make those observations detailed above. Well now, that lady has been operated upon—who has not heard of it—who, within the city of Dublin, has not been told of the wonders performed by the new German operation on Mrs. ——? Is not her cure written in one of the books of the prophets—has not her case been recorded in one of our periodicals? We have no desire to criticize too severely that record, nor to compare its incongruities, because it is possible that some natural and forgivable deception may have been practised on the operator. What has been the result? That the lady was, in time, able to count "her fingers at a distance of *six* feet from her." Charitably supposing that this is not a slip of the pen, but that she saw her own hand in a looking-glass, why could not the simple test be recorded of the patient walking over from a distance of six feet, and touching the point of another person's finger with her own? The right eye was then operated on, and it is said that she was thereby enabled to "distinguish the colour of ribbons at a dis-

tance of two feet from her"—just as she did the tints of the doylies this time twelve months; and she has informed the operator that she had occasionally "perceived her daughter perfectly, threading a needle at a distance of two yards." Why, again, should these tests, depending upon what a patient tells that she has done in the absence of the surgeon, be adduced, instead of what she absolutely can do in his presence? If this good lady is cured, or even considerably benefited by having a piece of iris cut away, and thus allowing more light to pass in through the thin edge of a partially opaque lens, we rejoice to hear it, and so, we think, will our readers; and we sincerely hope she will go on improving. There never was a greater mistake made by some narrow-minded people than supposing that honourable physicians, or surgeons, are sorry to hear that their former patients, upon whose cases they had (perhaps erroneously) given an unfavourable prognosis, have been cured, or even benefited.

The case of this lady is stated to be one of glaucoma. It certainly was not so originally, and the only thing *glaucomatous*, which we can perceive in it now, is the operation.

Among the curious effects to which the votaries of a medical epidemic are liable is an obtuseness respecting figures, and a hyperbolical phraseology in speaking upon the subject, which they would not employ under other circumstances. The statistical method of testing treatment, though liable to many of what the mathematicians call "disturbing causes"—in plain English, exceptions and fallacies,—is nevertheless valuable; but it seems, however, to be thrown overboard by the iridectomists. Dr. Bader heads his paper with a "Report of seventy-eight iridectomy operations for glaucoma, performed at the Royal London Ophthalmic Hospital, from May, 1857, to September, 1859, inclusive;" but for the life of us, and we have counted the table over and over, we cannot make it agree with this statement, for undoubtedly eighty-four eyes were operated on. The "Medical Press," in its number for May 2, 1860, perhaps from not counting the cases, falls into the same mistake when saying: "Those who have been hearing the boastings of those who are turning this matter to account will scarcely believe us when we tell them that in these seventy-eight cases there is not a single one of complete cure, and very few even of amendment;"—but this is not all, for Dr. Hildige, in an article on the subject of Iridectomy in Glaucoma, which appeared in the Dublin Hospital Gazette for 15th May last, writes as follows:—"According to the London Ophthalmic Hospital Reports, the operation for iridectomy for the cure of glaucoma was

performed on 107 eyes, from May, 1857, to September, 1859, inclusive. Of these, eighty cases were benefited by the operation, a fact which speaks volumes in its favour." How the figures in the foregoing statement are made out, we are at a loss to divine; and, with respect to the benefit achieved, it is really difficult for a reviewer to answer a worthy man and a respectable practitioner without being uncourteous.

It would seem, however, that the Report published by Dr. Bader was first written, and the table which should have been the basis thereof was compiled afterwards; certainly the incongruities between the two can only be explained in this manner. The first portion of Dr. Bader's Report appeared in No. 9, published in October last, and the conclusion containing the table which we have analyzed, and which bears no date, came out, we believe, in the end of April. In that first portion, an analysis is given of some seventy-eight cases, but they do not seem to form any part of, nor can they under any single heading, or by any stretch of statistical ingenuity, be made to agree with the table published as a continuation and conclusion of the same paper in No. 10. The jumble has been so complete that it should have been referred to the Statistical Congress. Certainly we can make nothing of it. But, though we cannot offer any explanation of the figures, we can supply our readers with a few trifling incidents related in the letter-press description of the reporter from the London Ophthalmic Hospital. In chronic glaucoma, "when *blind* for some time, it is not expected to regain sight; [and] a chronic glaucomatous eye with mere perception of light is *rarely* improved by the operation; but generally the pain and the progress towards blindness *is* (*sic*) arrested;" so that, although sight cannot be regained, to prevent mere perception of light being lost, a severe and, to the eye frequently fatal, operation is recommended. Hemorrhage, it seems, was not an unfrequent occurrence, and must have increased the intra-ocular pressure not a little—possibly upon the homeopathic principle of *similia similibus curantur*. We are not, it is true, told how many cases of hemorrhage occurred; but as such eyes may, we believe, be found in certain museums, where they are the pride of the curators, although possibly regretted by their original owners, and a source of unquiet recollection to the operators, they have advanced pathological anatomy; yet some may consider them a disgrace to operative surgery.

"In several of these cases of hemorrhage," writes Dr. Bader, "in which *the eye had been removed* after the escape of the vitreous, it was found that the blood was extravasated from the large vessels of the choroid, had displaced the choroid and

retina inwards, and *pressed the other contents of the eye* through the corneal section"!! That certainly was intra-ocular pressure with a vengeance, where the result of the new operation was to squeeze out "the other contents of the eye." It is mentioned incidentally that in many of these cases there was a "rotten state of the conjunctiva;" in general practice, we know surgeons do not usually operate where there is a rotten state of the skin. Slight and simple, as we were at first informed, was the operation of iridectomy, and as we have described it above, still there must have been occasionally great violence employed, for we read that, "in drawing down the eye with a forceps, for the purpose of fixing, it appeared in several cases to have caused rupture of the suspensory ligament and escape of the vitreous," &c. Now it very seldom occurs in extraction, unless where the vitreous is fluid, that the whole of that body is lost; there must, therefore, have been a very extensive opening made to relieve intra-ocular pressure in these cases.

As already mentioned, it is acknowledged that in several of these cases the conjunctiva was rotten; but furthermore, we are told that great care must be "taken, when seizing the iris, not to touch the lens or suspensory ligament, for the iris, being atrophied and *rotten*, is easily perforated by an instrument." Now that there are rotten irides—the term is a good one, we often employ it ourselves—we must admit; but that any surgeon of five years' standing would operate on eyes in which he knew the conjunctiva without, and the iris within, to be rotten, is certainly a more heroic proceeding than we ever knew to occur in this country.

Let us end this disgusting detail with one or two other extracts and statements. Occasionally the lens in its capsule "presented in the section, and six hours after the operation was found with about a third of the vitreous humour (of abnormal consistence) at the side of the patient." Again, "the opaque lens of several of the above cases was extracted with a favourable result." What this favourable result was, Dr. Bader has not stated, and we are unable to discover any record of the fact in the statistical table. "One case presented all the fatal accidents of the operation; first, some difficulty in seizing the iris, then escape of some vitreous, then of the lens, then of a large portion of vitreous, with the hyaloid fossa [?] attached to it; then of the remainder of the vitreous, followed by about half an ounce of blood." We presume it was the following sentence induced Dr. Hildige not to count over the cures given in the table to which we have so frequently referred: "Antici-

pating [by about half a year] the analysis of the cases successfully operated upon," states Dr. Bader, "it may be said that in about eighty cases the operation has had a favourable and, so far, a lasting result;" lasting, certainly so far as ever seeing again is concerned, but we are not quite sure that they are likely to last in the same quiescent condition they were in before iridectomy was performed. That iridectomy does not cure the intra-ocular pressure is let out where the reporter says: "A second portion of iris was excised in two cases, and the distended section (new increase of intra-ocular pressure) was punctured in two others."

We think it not unlikely that our readers have, ere this, said to themselves: this is not a review of Graefe's paper, but of the record of the operations performed in England upon his principle. Such is, we acknowledge, to a certain extent true. Graefe's doctrines, as published by the Sydenham Society, are plausible; but in a practical science of this nature we require something more than doctrines; cases must be given, and Graefe was wiser than his countryman of the London Ophthalmic Hospital, and kept his cat in his bag. Furthermore, we have no objection to the country of Hahnehmann, Preissnitz, and De Loev, having also the honour of inventing the new cure for glaucoma; our object is to arrest the spread of the epidemic in England.

It has been constantly asked, even by those who should know better, what harm do these operations do;—patients are blind, and cannot be made worse; surely, it may be tried. Such questions come badly from the Dublin school of pathology. They do harm by bringing operative surgery into disrepute; most of our hospital surgeons are also public teachers, the guardians of medical literature, and should remember that, although they may not risk the patient's eye or his life, they do risk their own credit and that of the art of which they are the ministers. Would such practitioners operate for stone in cases of diseased bladder or kidneys, or upon arteries in persons with diseased hearts, or remove the local exhibition of cancer while the system is permeated by that virus, or amputate limbs where fatal disease exists in the viscera? Was it not prophetic, and, perhaps, intended for some of those persons we have alluded to in the foregoing, that, more than half a century ago, Beer, the father of German ophthalmic surgery, wrote in his *Lehre von den Augenheilkunde*,—"glaucoma and cataracta viridis, being both the results of inflammation of the eye, must be classed amongst the incurable diseases, because always associated with a great amount of general varicosity of the blood-

vessels of the eye. This cataract readily entices inexperienced physicians, and fond of operating, to the most mischievous interference with the organization of the eye."

There will always be found a certain class of men not quite confident in themselves—not thoroughly permeated with the principles of their art, who are ever willing to adopt novelty, and thus show the public that they are conversant with the newest improvements in science. Upon this subject Professor Forget has written as follows:—

"We are daily told 'that when a new remedy appears, the first duty of the practitioner is to believe in it; that he has no right to doubt the intelligence or the good faith of the inventor; that the first thing to do is to try it,' &c., &c. Now, this is all flagrant absurdity, not to say hypocrisy. Such false principles have been introduced by people who have an interest in being on good terms with everybody, and who find their account in parading new remedies. The truth is the very reverse of this. We ought to wait for the proof before exposing ourselves to new deceptions. There are always plenty of persons ready enough to try the new thing. The wise man will abstain before incurring a danger. Your embarrassment will be great enough if you fall into the snare. New remedies rise up in such quick succession, that you will scarcely have done with one before another turns up. If you find a good one, soon you will be offered a better, and you will end your days in hunting after remedies, having all your life played the part of a dupe, and leaving behind you the remembrance of a superficial and versatile practitioner, without having any settled convictions. The practitioner, therefore, is not obliged to experiment with new remedies. The rule has been invented by *intrigants*, for the purpose of getting themselves spoken of."

Young surgeons do not get cases of white swelling, or aneurisms, or stone in the bladder, to operate on every day, and in the present energetic times of competitive examination and volunteer movements, they have betaken themselves to doctoring eyes. We say, proceed and prosper; there is plenty of room for all; and, alas! but too wide a field for ophthalmic practice in this country. Already two new ophthalmic dispensaries have been opened in our city, and we are sure that no one will regret new outlets being opened for those poor people who go the round of doctors and institutions, receiving care and attention at such establishments. We have only one word more to add—there are plenty of curable cases of ophthalmic diseases which but too often go wrong, or require such a length of treatment, that both patients and practitioners mutually tire of each

other. If, then, the young school of ophthalmic surgeons would turn their attention in this direction, and find out a more expeditious and certain cure for granular lids, or a means of keeping the pupil dilated during the progress of a severe internal ophthalmia, or of lessening the chance of inflammation and its results, even after the best performed operations for cataract, &c., instead of plunging into the globe, pulling out the iris, and cutting off a portion of it in disorganized and totally incurable eyes, they would deserve well of us, of the profession, of humanity.

Clinical Lectures on certain Acute Diseases. By Robert Bentley Todd, M.D., F. R. S., &c., &c. London: Churchill. 1860. Fcap., 8vo, pp. 487.

The recent death of Dr. Todd, in the midst of a career of great usefulness, combined with his important position for many years as a clinical teacher in King's College Hospital, served to throw a deep interest over this book at the moment of its publication; and, perhaps, at the same time rendered critics more alive to its merits, and less sensible to its faults. After the lapse of six months we still feel the shadow of the lamented and honourable author hovering over his book, intended apparently by himself to be a final and complete exposition of the notion that "much of the practice of former days rests upon the insecure foundation of a partial and imperfect diagnosis of the primary disease, and a very inadequate interpretation of the subsequent phenomena of the case."—p. xi. *of Preface.*

It must be confessed that Dr. Todd has left no doubtful evidence of the wide divergence of his views from those prevalent even among the moderate adherents of the elder school, but has rather chosen to assert his doctrines, and display his practice, in a manner the most unreserved. This is very advantageous for the purposes of controversy; while the clear method by which he has illustrated his Brownonian practice in the book before us will constitute it, for a long time to come, the text-book of the art of stimulation in *acute* disease; which, let it be remembered, has ever been accepted as the crucial test of its value. But we venture to predict that this work will be something more. It will be a new starting-point—not from Brown forwards—but in the opposite direction. It will be a landmark in the medical history of our time, noting at once the farthest flow of the mighty tide of therapeutical innova-

tions, and speciálly of resistance to antiphlogosis, and marking, at the same time, the commencement of an ebb which possibly may not terminate in this generation. No man can hope to effect more with stimulants than Dr. Todd has done; can use them more freely in all stages of almost all forms of disease, regardless of sex, age, habit, and symptomatic modifications. The young sempstress of eighteen, labouring under typhoid fever, and the veteran drunkard afflicted with phlegmonous erysipelas, come in for the same doses of the same fiery stimulant, brandy. How facile must appear the art of medicine to the students of such a clinique! How consoling to the conscience of young men, wanting in self-reliance, and fearful that something more might have been done to ward off the fatal issue of disease, must be the reflection that the simple exhibition of an ounce of brandy every half-hour, and beef-tea and quinia enemata every four hours, do form, in very truth, the "law and the prophets" of the *ars medendi*. No man, we say, can hope to improve on Dr. Todd in this aspect; and therefore, it becomes us, as critics, to give a full summary of the conclusions arrived at by a teacher so distinguished and so much beloved by a numerous body of students.

In the carefully written Preface the following conclusions are summed up. They are important as giving a clear idea of the whole book:—

"1. That the notion so long prevalent in the schools, that acute disease can be prevented or cured by means which depress and reduce vital and nervous power, is altogether fallacious.

"2. That acute disease is not curable by the direct influence of any form of drug, or any known remedial agent, excepting when it is capable of acting as an antidote, or of neutralizing a poison, on the presence of which, in the system, the disease may depend (*materies morbi*).

"3. That disease is cured by natural processes, to promote which, in their full vigour, vital power must be upheld. Remedies, whether in the shape of drugs, which exercise a special physiological influence on the system, or in whatever form, are useful only so far as they may excite, assist, or promote these natural curative processes.

"4. That it should be the aim of the physician (after he has sedulously studied the clinical history of disease, and made himself master of its diagnosis) to inquire minutely into the intimate nature of these curative processes; their physiology, so to speak; to discover the best means of assisting them; to search for antidotes to morbid poisons; and to ascertain the best and most convenient methods of upholding vital power."

Dr. Todd then proceeds to hint that the time is coming when the distinction of acute inflammations and acute diseases, in general, into *asthenic* and *sthenic*, will be discarded. This last averment may be fairly taken as illustrative of the author's teaching; essentially revolutionary and dogmatic, as it appears in this book. It is too obvious that his acquaintance with the classical delineations of disease was far inferior to his acquisitions in modern research, and hardly equal to his great abilities. This must have seriously tended to impress upon his mind a tone of thought, which, for want of a better term, we must be allowed to term 'physiological,' as distinguished from 'clinical.' But this is not sufficient to account for such a statement, opposed, as it is, by daily experience. For the book of nature was ever before him. Illustrations of disease were constantly submitted to his eye, under the most favourable circumstances for careful observation. The fact is, that Dr. Todd commenced his professional career in London, when the use, almost indiscriminately among the mass of his brethren, of the antiphlogistic regime nearly rivalled the practice of the immortal Sangrado. His acute mind must have often noted the defects of such a routine; and his critical observations would have been stimulated the more easily, as he had seen in this city—of whose medical school his father was so eminent a member—a mode of viewing and treating disease based essentially upon a thorough appreciation of the depressing nature and proclivities of morbid processes. Nevertheless, it would appear from numerous passages in this volume, that Dr. Todd, in his earlier career, rather went with the London stream, than with Dublin reminiscences. But a violent reaction was at hand, and in this, the revolutionary epoch of his medical career, he lost his balance. Unhappily, in the midst of a brilliant success, his life was cut off, and all opportunity denied to him of finding in a wise eclecticism that medium between a promiscuous antiphlogosis and rash stimulation, which seems to be the final resting-place of all sound medical experience.

The distinction between diseases exhibiting a sthenic character and those marked by an asthenic character, though denied by Dr. Todd, is, perhaps, of all the classifications of disease, the most fundamental—the most true to nature. It is one which is made instinctively after the simplest observation, and yet confirmed by the most rigid inquiry and the most searching philosophy. What a strange condition of mind is evinced by the denial of so elementary a view of our science! It lies at the root of the theory and of the practice inculcated in

this book, and, in our opinion, vitiates from the bottom its reasoning. Alas! the routine man of the lancet and tartar emetic will find an easy victory here, and ask with astonishment whether it be a delusion that one patient at one time is strong under disease, and another weak—the whole powers of life in a state of firmness and tension in the one, in a state of yielding and laxity in the other. He will further inquire how it happens, if this able teacher be correct in his interpretation of bedside phenomena, that this man, labouring under pneumonia in an acute form, dies from the progress of the disease, in consequence of its invasion of a large portion of lung structure, in a short time—asphyxiated, in short, with heart and nervous system exhibiting vigour and resistance; while that patient, with a moderate portion of his lungs invaded by exudation, dies from the existence of an amount of depression of the vital forces—pre-eminently of the functions of the nervous and circulatory systems—simply incompatible with the maintenance of life. There is no answer to these questions in Dr. Todd's philosophy—none anywhere, excepting in the admission of the basic distinction that sometimes the general powers of life sympathize in the direction of strength, and sometimes in the direction of weakness, with the local disease; in other words, that the disorder is now sthenic—now asthenic.

The first of the preliminary propositions contains, by implication, a statement which we can by no means admit: it is, that antiphlogistic measures necessarily "depress and reduce vital and nervous power" *in disease*. The contrary is a matter of familiar observation in reference to three, at least, of the elements of that regime—bleeding, emetics, and purgatives. The vital and nervous powers are certainly anything but depressed after a copious bleeding in traumatic meningitis; the countenance and the pulse forbid, too, any such inference after the copious application of leeches to the abdomen in certain forms of peritonitis. We lately heard of a great prize-fighter attacked by an acute disease, who, after a copious bleeding, felt such an improvement in his "vital and nervous power" that he suddenly thrust out his arm at full length, and cried, "he was ready to fight now any man in England." The effect of an emetic in producing reaction—increase, rather than diminution of power, in certain circumstances—needs no further allusion. Of purgatives we can aver, as has been admitted in every age of medical history, that there is no means at present known comparable with them as powerful exciters and regulators of the nervous system in certain morbid conditions. The instantaneous relief of "depressed vital power," in a variety of

diseases, after the energetic action of a cathartic capable not merely of emptying the bowel, but of stimulating its numerous glands, must surely be beyond the reach of question. We must, however, go even further than this, and ask the practical reader whether he has ever remarked, in fevers and other acute diseases, a depression of vital power—a dull stupor of the nervous system—a perturbation of the whole functions, under an excessive administration of alcohol, which have rapidly been replaced by steadiness and calm after its withdrawal? Yet, in Dr. Todd's view, alcohol necessarily exalts vital power, and strict diet as necessarily tends to reduce it. If we examine the proposition from another aspect, we can only use the words of Dr. Symonds, that our "memory swarms with cases, each pressing forward to be the first to give a wondering and emphatic refutation of this extraordinary dictum"[a]. We feel that it is impossible to question with success the extent of the power, in certain cases and seasons, exercised by bleeding, local and general, tartar-emetic, active purgation, cold applications to the surface (and such favourable operation seems to be frequently brought about through the medium of a temporary reduction of vital and nervous power), after a period of excitement and exaggeration of function. We must admit the existence of a school of physiological medicine, whose glory it is to deny these and similar facts. But this school is under the domination of hypothesis; so that the plainest teaching of experience is set aside when happening to traverse its speculative deductions.

Another shibboleth of this school is incorporated in the second proposition of Dr. Todd, "that acute disease is not curable by the direct influence of any form of drug, or any known remedial agent, excepting when it is capable of acting as an antidote, or of neutralizing a poison, on the presence of which in the system the disease may depend—*materies morbi.*" Here the author frankly avows that, in all diseases of acute character, there is a *materies morbi*—a something to be neutralized, if drugs or remedial agents have any direct influence on their course. A far more explicit affirmation of the same doctrine, without the qualification, is to be found in other parts of the book, whence we infer that Dr. Todd viewed morbid processes in the most exclusively humoral light. This sadly impairs the utility of his prelections, while it throws an air of simplicity over the doctrines and practice inculcated very seductive to the youthful reader. It will be observed that no specific is admitted into this charmed circle of speculation. In the Lecture on

[a] Medical Times and Gazette, vol. i., p. 350, 1860.

Erysipelas the tincture of the sesquichloride of iron is denied all modifying power over its progress. We suppose that quinia, whose influence over intermittent fever is indisputable, ranked with Dr. Todd as an antidote, although certainly there is not a tittle of evidence that this disease is produced by a poison, or *materies morbi*, in his sense, and the whole history of the malady may be not unfairly considered as illustrative of some subtle nervous aberration.

The rashness of the assertion contained in this proposition becomes evident on the slightest consideration. Who, for instance, can deny the "direct influence" of the affusion of cold water in *coup de soleil?* And this is an acute disease enough, tending to a rapidly fatal termination, where we do not suppose any "poison" can be imagined to exist. But our objections lie at the very root of the matter, apart from all affairs of detail. The plain question that we must ask Dr. Todd's numerous defenders is—Do we know enough of the inner causes of disease, the mutual actions of the body and things without? have we such trustworthy knowledge of the *modus operandi* of remedial agents, that we are enabled to declare that these latter act in one way only, in so far as they are able to influence disease? Such an interrogatory carries its own reply on its face. We will not now insist on the obstructive tendency of such statements as we are combating, upon the progress of inquiry into the physiological and therapeutical properties of drugs. We will content ourselves with noticing that all our present acquaintance with these would lead us to reverse Dr. Todd's dictum, and rather induce us to believe that the most direct influence exerted by our curative agents is on the solids, on the minute vessels and nerves. The most curious part of the whole subject, however, is, that we have absolutely no evidence of the existence of a morbid poison in the great majority of acute diseases; that the existence of a *materies morbi* is doubtful in almost all; that the *modus operandi* of such as we have some notion of, is altogether unknown to us, and that, so far as we know, there is no remedial agent which can in any sense be said to be an "antidote" to a morbid poison. The coarse toxicology of the mineral and vegetable kingdoms seems to have strangely warped the author's fine mind, and to have led him to give a purely fanciful basis to therapeutics.

The third proposition, "that disease is cured by natural processes, to promote which, in their full vigour, vital power must be upheld," reads like a self-evident truth; but then we must inquire what the author means by "vital power" and by "natural processes." We find that in the author's sense a na-

tural process of cure is essentially one of elimination. Certain exudations having been effused, and certain changes having been effected in the exuded materials, the next and final step is their discharge, either immediately by conduits arising from the diseased organ, as, according to the author, in pneumonia, or mediately through the instrumentality of the vascular system. But are these evacuations or excretions in fact the process of cure, or the result of the process of cure? In typhus fever there is no exudation *essential to the disease;*—there is no critical evacuation, but as an exceptional condition. In ague, there is a remarkable series of alternating periods of quiescence and excitement, the final stadium of these latter being sweating. But this seems to be in no manner an effort at elimination, but the inevitable result of antecedent states of the vessels and nerves. We do harm, often very serious mischief, by attempting to promote what wears the aspect of so very natural a process of cure. On the contrary, we produce the most perfectly curative result known to medical science by a drug which stops these alternating periods, and prevents the evacuation through the skin.

In reference to "vital power" we must not forget the fundamental postulate of Dr. Todd's pathology, that disease and debility are convertible terms, indicating strictly correlative conditions. Now, for the purposes of the practical physician, his sole object of anxiety in this relation must be—is there sufficient, a plus or a minus *vital resistance* to the disease? And if he would be anything but an empiric, if he would become able to deal with morbid processes, so as to give them an unembarrassed sphere of operation, it behoves him to set about this investigation with an earnest humility, such as he cannot fail to be inspired with, if he only considers that it comprises a full half of the whole duty of the physician. The appreciation of this point, consciously or unconsciously, makes the true clinical observer. Inattention to it is the characteristic of schools—where the study of the natural history of disease takes the place of the proper art of medicine.

One side of these inquiries has been well put by Dr. Symonds of Bristol, in the paper previously cited. "In the early period of inflammation and its attendant fever, where and what is the vital power to be upheld? Take the three great functions of life; is it the power of the heart? This is already inordinately and dangerously strong. Is it the power of respiration? This too is, excepting when the lungs are themselves diseased, above the normal rate. Is it the power of the nervous system? Already sensibility is too acute, and thought too active, while in-

creased motion would be positively detrimental. But other expressions made use of, such as 'treatment from the beginning of a decidedly supporting and stimulating nature,' imply that strong nutriment is to be given, in order, I presume, to repair waste. But as yet there is no waste to be repaired. The skin is obstinately dry, and there is far less expenditure than natural from the liver, the bowels and kidneys, and other excretory organs. The only function of the system that denotes anything like tendency to the restoration of order, is the instinct which refuses food. More fluid is craved, "because, though it leaves the system so scantily through the natural outlets, it disappears in a mysterious way, and seems to enter into some abnormal chemical combinations with the blood and tissues." In such conditions as these it is more than probable that the profuse administration of alcohol may neither uphold vital power nor promote any natural process of cure. Dr. Todd seems to have had the keenest idea of the impropriety of embarrassing the *vis medicatrix* by bleeding, mercury, strict diet, and soforth; but it seems to have never occurred to him, that the administration of a couple of imperial pints of brandy every day to a young girl in her teens, suffering from an acute disorder, may possibly disturb the natural evolution of pathologic processes to an infinitely greater degree. Mark, too, again, how completely *a priori* reasoning negatives the author's views. We have strong analogical grounds for the use of bloodletting; for sometimes nature brings about the most decisive relief by spontaneously setting up an evacuation of blood. The same may be said of purging, sweating, biliary vomiting; but where have we an analogy in the natural history of disease for the employment of alcohol? It is true, that when the nervous and vascular systems show a minus resistance to the disorder—when an ataxic condition is superinduced early or late—or when the waste effected, urgently demands attention to the maintenance and increase of assimilation,—alcohol constitutes a precious resource; now, as a neurotic stimulant—now, as a valuable means of support. But it is easy, nay, necessary, to admit this, without allowing that brandy exercises a direct curative influence over all acute diseases, in all stages.

We will not delay longer over the prolegomena of the lectures. We only remark, that our objection to the fourth proposition is based on its contracted view of the physician's scope in searching for remedial agents. According to the author, we have only "to search for antidotes to morbid poisons, and to ascertain the best and most convenient methods of upholding vital power." The duty of the physician we believe to be, to

endeavour to combat morbid processes by every instrument in his power—to listen to the dictates of experience, and watch the actual effects of the measures he employs—pleased when he can bring an antidote to bear upon a morbid poison, but prepared to administer all and every remedy, of whose beneficial operation he has a sufficient warrant.

In the first three lectures the subject of rheumatism is discussed; and, as in every other part of the work, admirably illustrative cases are reported by the able clerks of the hospital. On the whole, we think the author's practice in this malady enlightened and judicious, although we shall be obliged to dissent from many points of detail. In discussing the first case, that of a young woman, aged 23, who had recently been confined, he alluded to the profuse sweating by which it was accompanied:—

"This is a special phenomenon of the fever. It is not distinctly of a critical or sanitary nature, as we sometime see it in other fevers, for the sweats do not produce any marked immediate good effect, either on the joints which are implicated in the disease, or on the general state of the patient. In this case, the sweating was profuse; you doubtless recollect how it poured forth from the patient's head and chest, and, indeed, from the surface of the body universally; and from that, you may judge how much fluid must have escaped through the channel of the sudatory apparatus. I must say, however, that I do not regard these sweats as otherwise than salutary within certain limits; I think that, in the early days of the fever, they should be encouraged as an important medium for the elimination of noxious matter from the system, and that you ought to be cautious how you stop such sweats, except where they are distinctly debilitating to the patient."

It is proper to observe that, in cases like the one here discussed by Dr. Todd—that is, rheumatism occurring soon after confinement—sweating is an especially characteristic symptom. Sudamina appeared in this case, and we have observed the same condition. But is the sweating of acute rheumatism an eliminative effort of nature? Do measures calculated to increase it, diminish the severity and hasten the cure of the disease? Surely not. In rheumatism we have a good instance of an evacuation through a great secretory apparatus, being anything but a part of nature's system of cure. It is a symptom only of a morbid state; just as the vast overflow of aqueous fluid through the kidneys in diabetes is a symptom of a given condition, which obtains no relief from such overflow. We are well convinced that the excessive diaphoresis of rheumatism is itself a secondary cause of various morbid sequences in this

malady, deserving far more weight than has been allotted to it. Fatal cases have occurred to us in the female sex during the last dozen years, which we have referred mainly to the profound asthenia, and tendency to fibrinous clots, brought about, as we have believed, by the intense action of the skin. It is a matter of constant observation, that the first indications of relief coexist with an increase in the urinary secretion and a diminution in that of the skin. Sometimes a spontaneous diarrhœa seems to be the starting-point of improvement. Yet, Dr. Todd says, "it is probable that the *materies morbi* in rheumatic fever is lactic acid, or some analogous agent. We know that the natural emunctory of this is the skin."

The author plainly exhibits his consciousness of the severity of the sweating as a real symptom of the disease. For, in alluding to the useful application of cotton wool to the joints, he warns his hearers that patients are sometimes distressed by its adding to the existing diaphoresis. The quotation we have just given equally demonstrates the doubts in his mind of the sanitary nature of the evacuation. But he was tied hand and foot to the doctrine of elimination, natural and artificial, in his general directions to his class, so that he lays great stress upon the necessity of promoting the emunctory action of the skin. This, however, was unnecessary, taking the author's own doctrines as true. Sweating is not a "natural process" of cure in rheumatism; and, therefore, not one to be either excited or promoted.

In the general directions at the end of the second lecture it is stated, that you must give purgatives to such an extent as to keep the bowels in a loose state, taking care not to carry this treatment so far as to weaken your patient. The records of the cases leave the impression, however, upon our mind, that in his actual practice deficient attention was bestowed on the bowels.

Dr. Todd's third case is that of a labourer, age 29, whose health had been generally good, and who was accustomed to liberal potations of beer. He was admitted on the 21st of September, 1854. Pericarditis was noted; all the phenomena were those of intense reaction. On the fifth day after admission, the pericardial friction sound continuing, and the number of joints affected being greater, but the tongue cleaning, bowels open, appetite improved, urine clearing and falling in specific gravity; brandy was administered, whether three or six ounces per diem is not clear. "There was no important alteration for some days."

On the 3rd of October it was necessary again to blister the chest.

On the 4th, sudamina are noted.

On the 7th, being the seventeenth day from his admission, we read the following report:—

"He is now improving daily. Pulse, 84; respirations, 26; sleeps well, and does not sweat; the pain is confined to some of the muscles; a slight friction sound alone remains audible at the apex of the heart; tongue clean; appetite good; bowels open; he still continues the brandy."

After this he remained some weeks in the hospital gaining strength; there was a return of slight pain in the joints, for which iodine was applied. Had this patient been bled, what a homily the author would have read to his class upon the *nimia diligentia*, the tardy cure, the slow and imperfect convalescence, thus engendered. For our own part, in the interests of truth, we must declare, with a solemn earnestness, that the case is a perfect illustration of the *nimia diligentia*. The disease was fast approaching to a natural termination on the 26th of September. Brandy was administered, and it took eleven days more to obtain the recurrence of a similar condition to that which existed previous to its administration. We are deeply impressed with the fact that there is no acute disease of a febrile nature which bears alcohol so ill as rheumatism; and we do not think any physician can interrogate his clinical experience, his mind unbiassed by prepossession, without arriving at this conclusion.

The fourth case of rheumatism occurred to a girl aged 16. It was one of the utmost severity. She was ordered alkaline and neutral salts of postash, and a little opium every four hours. On the third day of the treatment the pulse had fallen 36 beats, and she was free from pain.

On the 10th day of the attack she was quite free from pain. There was no relapse, and she was soon after discharged well. This is an admirable illustration of judicious treatment. There were no attempts to "uphold vital power;" not a particle of stimulant of any sort was given. There were no violent efforts to stimulate eliminatory organs. No purgative, no sudorific, was administered.

The fifth case was also one of great severity. The treatment adopted consisted in giving solution of acetate of ammonia, and laudanum. Although endo-pericarditis attended this case, on the third day of treatment amendment commenced to appear, still more confirmed on the fifth day; and her after-

progress seems to have been most satisfactory; not a particle of stimulant was given. In these cases we have examples of the cure of rheumatism on well recognised principles. They show that Dr. Todd's practice was often superior to his dogmas, as it could not fail to be in one so acute and conscientious. But are his numerous disciples equally discriminative? Unhappily, the dogmatic teaching of a powerful mind is remembered, when the judiciously observed exceptions are forgotten; and experience offers abundant proof that the worst parts of an *ultrageous doctrine*, if we may quote one of Canning's significant phrases, are more apt to be carried out by enthusiastic disciples than the best,—Marat seems to come quite naturally after Mirabeau.

The second lecture is mainly occupied by criticisms of various modes of treatment of rheumatic fever. Bleeding is severely condemned, but, in the main, not more severely than it deserves. However, it is satisfactory to know that routine venesection had disappeared a dozen years ago from these islands. No warning is certainly required against this measure now-a-days. In reference to colchicum and guaiacum, it is stated that "these drugs, but especially colchicum, have long been considered to possess a specific influence over rheumatic and gouty affections," which Dr. Todd considers to be a fallacy. It is long since any competent person believed that colchicum exercised a specific influence in acute rheumatism. For many years past, it has disappeared from the medical man's memory as one of the things "good for rheumatism;"—for rheumatism, we mean, of febrile form. Quite as surely, colchicum maintains its position as more potent, *longo intervallo*, than all other remedies with which we are acquainted, in gout, in which disease we must be allowed to term the influence of colchicum strictly "specific." It is true that we are better acquainted both with the natural history of the disease, and with the disadvantages of the drug, than formerly. We know that it is not desirable to give this medicine on every occasion of a gouty attack. We have now learned that the *attack* may be cured, while the *disease* may remain. Nevertheless, nothing has hitherto come to light calculated to shake the opinion of our immediate predecessors, that colchicum constantly annihilates a paroxysm of gouty pain, though it may leave untouched the gouty disorder. The observations upon the treatment by opium are excellent. "You will find it extremely serviceable in practice, but I do not recommend it alone." It is further observed, that "its great value consists in relieving suffering, and soothing the nervous system, while

it promotes diaphoresis." The circumstance that it is apt to stimulate the last to an extravagant degree, has often compelled us to withhold it, or administer the drug in night-doses only.

Haygarth's plan of giving bark, since imitated in Paris by M. Solon, is disapproved of. It is admitted by the author that he has "seen great good done rapidly by the use of quinine, in cases where the sweating is colliquative, and the urine copious and pale, with abundant precipitates of *pale* lithates." These constitute trustworthy marks by which the propriety of the quinine treatment may be determined, as we have had occasion more than once to note. The local treatment advised consists in cotton wool and blisters. Leeches are said to be "useless or injurious." We cannot subscribe to this dictum. Very frequently one or two joints are the seat of intense pain for several days. The patient especially refers his suffering to these particular joints. We can speak from experience in our own person, as well as from wide clinical observation, that, in these circumstances, leeches will not "probably fail to give relief." On the contrary, the agony of the patient obtains immediate and often permanent diminution.

The author sums up his treatment as follows:—

"You perceive that all the means employed in this mode of treatment tend to elimination, and to the relief of pain; the opiate sudorific affecting the skin, the nitre and alkaline salts acting on the kidneys, the purgatives on the mucous membrane of the bowels, the wool and blisters on the joints.

"During this treatment, while you allow your patients the liberal use of simple diluents, you must give a fair amount of nourishment from the first, and I think this may be best supplied by a small quantity of good beef-tea, given frequently throughout the day.

"Often you will find it useful, *and always when there is a tendency to delirium*, to give stimulants, such as brandy or wine."

The italics are our own, for we are anxious to draw the attention of our readers to the tone of Dr. Todd's teaching, as evinced by this passage. We admit that the existence of delirium is very often, indeed, a sound reason for the administration of alcohol. We willingly further admit that the late clinical Professor of King's College Hospital did great service by his frequent allusions to this fact; but will any experienced physician, acquainted with the literature of his profession, be able to go along with the author in so wholesale and exclusive a declaration as that stimulants should *always* be given when there is a tendency to delirium? Dr. Todd seems to us to

have been like Napoleon the First, and many other men of strong character in history. He would only see one side of any question submitted to him. The other must be ignored. Doubts, however, of the certainty of our view, if inconvenient while giving instruction, are not rarely prudent in practice.

The third lecture is devoted to the consideration of the complications of rheumatic fever, and chiefly to the cardiac diseases incident to the disorder. The author insists, and we believe with justice, on the great importance of free blistering in the cardiac inflammations, but energetically repudiates blood-letting. That the author's statements, relative to the injurious influence of excessive bleeding, and his theoretical arguments, based on trustworthy modern researches, deserve the utmost weight, we are not disposed to deny. But our clinical experience of the value of local bleeding, to a moderate degree, in the primary stage of endocarditis or pericarditis, has spoken too decisively to be doubted. There is no measure that we are aware of, which produces relief to so marked a degree,—and knowing the similarity of morbid processes, that like results follow from like agents when employed in similar general conditions, we are fairly at a loss to account for Dr. Todd's observations on this point, excepting on the supposition just alluded to, that he was so influenced by the fears of diminishing the "vital fluid," he resolutely shut his eyes to the opposite phase of the question.

The delirium of rheumatism is discussed with great ability. The description of this symptom offers a good example of the lecturer's powers of delineation:—

"It sometimes comes on gradually, the patient having been a little talkative and wandering for two or three nights; sometimes it comes on quite suddenly. In its general character it resembles delirium tremens; generally, however, exhibiting less of the nervous tremor which belongs to intemperance. The patient is restless, busy, talkative, picking or pulling the bed-clothes, frequently rising in bed, and wanting to get out of bed, reaching out his hand, as if to catch hold of some object before or behind him, and sometimes, a most important symptom, obstinately refusing to take either food or medicine.

"In many instances, as I have already said, this delirium ushers in pericarditis, pleurisy, or pneumonia; frequently, however, it occurs after one or other of these maladies has set in, and sometimes it occurs without them. It has, therefore, I think, no necessary connexion with these internal inflammations, although it frequently accompanies them."

Should death occur, the membranes of the brain are stated

to be perfectly free from abnormal deposit, the pia mater and gray matter pale; and the sub-arachnoid fluid is increased in quantity. "These signs indicate not only that the brain has been imperfectly supplied with blood during life, but that the vascular pressure upon it is less than it ought to be; and that, consequently, an increase of the subarachnoid fluid has taken place."

In again remarking on the absence of effusion about the brain in the post-mortem examination of the thirteenth case, it is said "these effusions, indeed, we now know, are *results* of the diminished size of the brain which follows its imperfect supply of blood, and its impaired nutrition; and, as they do not exert any undue pressure on the brain, or any part of it, they produce no symptoms during life."

Now, we entirely coincide with the author's general views of rheumatic delirium; we accept his delineation of its characters, as, in the main, correct; we agree with his declaration of the necessity for supporting and stimulating the vital powers in the great majority of such cases; but two facts, altogether beyond dispute, preclude our acceptance of these exclusive pathological dicta:

1st. That delirium is indisputably a symptom of inflamed brain or membranes as apart altogether from rheumatism.

2nd. That *occasionally* in this disease, where delirium has occurred during life, the well-marked indications of inflammatory exudations have been observed after death[a]. Surely, it might have been sufficient to insist on the great frequency of delirium in rheumatic carditis, unaccompanied by any brain inflammation, on the importance of recognising the fact of effusions within the skull-cup being often the *result*, rather than the cause, of morbid processes, without annexing the total denial of other aspects of these questions. These are not points for mere theoretical debate. They are relevant to the difficult problem, How is the rheumatic delirium to be treated? We have already indicated our general agreement with the author in his view of the necessity for supporting treatment when this symptom appears, the more especially in the later stages of the disorder; but this forms a portion only of his treatment, which also includes opium. It is, indeed, stated that sometimes patients "who have been actively delirious will suddenly fall into coma, and die;" and elsewhere it is averred, that when they evince "a marked tendency to coma, then, of course, you will not

[a] Watson's Practice of Physic, vol. ii., Fourth Edition, page 302; both text and foot-note.

use opium;" but the author's practice negatives, in the most precise manner, these wise precautions. On the same page as the first of these remarks is made, the case of an university student, aged 22, is given. It was evidently one of great severity. Ten days after the commencement of acute symptoms, Dr. Todd was telegraphed to see him; he had a full, throbbing pulse, and soon became very restless and delirious. At midnight of the same day he again visited him, and detected a friction sound over the heart; "the delirium had increased, *with a comatose tendency;* but he could still be roused, and then recognised me and others about him. I ordered him half a drachm of the bicarbonate of potass, and a grain of opium every three hours, and a small quantity of brandy. In the night the delirium increased, and he refused to take food or medicine; *his breathing became catching;* pulse 120; and soon after nine o'clock the next morning he died."

In his remarks the author declares that if he had to treat such a case from the beginning, he should employ "opium at once." Possibly it might have been beneficial to administer this drug at the beginning; but does it therefore follow that the actual period of its administration was justifiable? Did we feel at liberty to make further comments on the case, they would be very different from those of the author.

The next patient was a young servant girl, aged 17. Delirium was a marked feature of the case. So far as we can judge from the rather obscure account of the treatment, somewhere about the fifteenth day opium was pretty freely administered; a few days afterwards her pupils were contracted; she was drowsy, "and evidently much affected by the opium." She lived twenty days afterwards, constantly taking opium; delirium returning, apparently after a short cessation, but marking the case to the last day.

The next case is also that of a woman, aged 34. The symptoms were severe, and attended with marked endo-pericarditis. She was admitted on the 18th of June, 1844, having been ill for more than a week. Dover's powder, dose not mentioned, was given every four hours. At 11 P.M., June 19, the patient up to that time complaining of little or no pain, the physician's assistant was called to her, and found her delirious, talking incoherently, and the delirium accompanied by hallucinations; pulse somewhat increased in frequency, 128, weak and compressible. She was ordered thirty minims of the liquor opii sedatives immediately. She slept after taking the opium, but at two o'clock A. M. the physician's assistant was again sent for, in consequence of her having had a convulsive

fit affecting all her extremities. "He found her lying on her back, *her pupils very much contracted and insensible to light;* pulse 132, weak, but regular; her head hot, but the forehead perspiring; the respirations were 30, and of a croupy character. *She was quite comatose.* She had a return of the convulsions, screamed out, and died." Comment is unnecessary here.

The next and last case is specially adduced as affording an illustration of the benefit likely to arise from "the early and liberal use of opium and stimulants," where delirium accompanies the rheumatic phenomena. In so far as regards the former, at least, the case is a remarkable example, taken from an unimpeachable source, of the exactly opposite, namely, the ill effects of the so-called remedy. It was a footman, aged 19, of temperate habits, admitted on the 10th of February, 1852. "He had been taken ill five days before; many joints were affected, and a systolic bellows-sound was heard at the apex of the heart on admission. He was ordered bicarbonate and nitrate of potass, with five minims of laudanum, every four hours. He passed restless nights for the next two days, although the laudanum had been increased to ten minims. It was now increased to twenty minims. On the 14th, pericarditis appeared; on the 15th, he was for the first time delirious; on the 17th, being restless, he was ordered a night-draught of thirty minims of laudanum; ammonia was added to his mixture, and he was ordered eight ounces of wine in the twenty-four hours." That night, however, he was very delirious, trying to get out of bed, and leave the ward. On the 18th, he was ordered a pill containing two grains of calomel, and a quarter of a grain of opium, with each dose of the mixture. On the 19th, we find the delirium was not confined to the night, but he continued muttering to himself in the day, unless aroused or spoken to. The opium in his medicine was now increased by five minims, making twenty-five minims, and he took it every three hours. On the 20th the delirium still continued, and he seemed unconscious of what was passing around him; his pupils were contracted; pulse, 116; respirations, 36. *The mixture was omitted,* and five grains of carbonate of ammonia were given every two hours, together with half an ounce of brandy in beef-tea every hour; the pill was continued every *six hours.*" That same night he was much quieter, and slept a little; in the morning his respirations had fallen to 26, and his pulse to 104. The next night was also comfortable. On the 24th he was free from pain, and progressing favourably, just a fortnight from his admission. He continued in the hospital about a month; morbid sounds continued to be heard for

some time about the heart, and there was also some chronic swelling of the knee.

We beg the reader's attention to this case—it is specially invited by the author himself. Here is a young man, almost a boy, of temperate habits, who gets an attack of rheumatism. There is at first no delirium; he is treated *inter alia* with opium. It is increased to 20 minims of laudanum every four hours; delirium comes on. The laudanum is continued, and 8 ounces of wine are ordered. He is that very night "very delirious." Solid opium, in quarter-grain doses, is given with the mixture; the delirium, previously confined to the night, comes on in the day; five minims are added to the laudanum, and he takes it every three hours. He becomes unconscious; delirium continues; the pupils are contracted. All opium is taken off, with the exception of one grain, in the 24 hours, in doses of a quarter of a grain every six hours. Brandy is freely administered. From that hour, the patient begins to recover, and he becomes quiet. If this be an illustration of the beneficial effects of opium, will Dr. Todd's disciples be good enough to inform us of the nature of the evidence on which they rely, as proof of the evil effects of any given drug? For our own part, we think that stimulants were prematurely administered, and aided in embarrassing the progress of the case. We are sure that the opium had a most prejudicial effect, and equally certain that the continuance of this drug on the 20th, in the same quantity as before, would have swiftly brought to pass a fatal termination. We would not be misunderstood. We know full well the benefit of opium in many cases of acute rheumatism—but there are conditions which militate against its employment—and those conditions meet in the cases we have discussed. This remedy constantly goes wrong in the female sex in all diseases. We have seen the most confusing phenomena superadded to the existing state, more or less allied to hysteria, after the administration of a large dose of opium to a female labouring under an acute disease, and especially under rheumatic fever. Of the four cases just detailed, three were fatal; two of these were females. Opium constantly disagrees with the young; we have observed this so often that we believe it to be connected with some definite condition of the nervous system. The ages of these patients were respectively 22, 17, 31 (a woman), and 19. Again, the cerebral phenomena of acute rheumatism, epecially delirium, seem to be influenced only in an unfavourable sense by opium. We have noted this fact so often, both in hospital and private practice, that we

think it our duty to repeat here a warning we have often orally made, that this drug should be administered under these circumstances with the utmost circumspection—generally omitted, and, if given, only in small and rare doses. Nothing can be imagined more different than the result of a well-timed dose of opium in certain special conditions of fever, and that of the same agent in the states we are now concerned with; and it offers fair evidence that the causes in operation producing the morbid cerebral manifestations are also different.

The fourth and fifth lectures are occupied with the subject of continued fever. We may observe here that Dr. Todd fully accepts the results of modern researches, that typhus, typhoid, and relapsing fever are produced by "distinct poisons." These lectures abound with admirable observations, and show more than, perhaps, any other portions of the book, the practical powers of the experienced physician. To sustain the vital forces while disease is undergoing its proper evolution is, if not the same, at least the chief part of our duty in fever, which would seem to offer a natural sphere, in which the author could show the value of his doctrines and practice to the most advantage. The cases are characterized by enormous stimulation, to an extent we have never seen in the wards of physicians renowned in this very branch of pathology, and which we have certainly never thought fit to imitate. Thirty ounces of brandy were given daily, during a portion of the time, to the first case, a large bony man, of strong build, thirty-two years of age. He died. The second case, age not given, took brandy and chloric ether. He died. The third case, a girl aged 14, took as much as an ounce and a half of brandy, every hour for three days together, and for the next fortnight half an ounce was hourly administered; this latter quantity, however, being sometimes much increased as occasion required. She recovered under this astounding stimulation—a young girl fourteen years of age! The case is too meagerly reported for us to judge in detail of the effects produced by thirty-six ounces of brandy in the twenty-four hours, under these circumstances of age, sex, and disease; but we earnestly draw attention to a point which should never be lost sight of in judging of the treatment of a given case of fever: we mean its *duration*. She was admitted on the 26th of September. It is not stated how many days she had been ill previously. "It was not until the 1st of November, thirty-five days after admission, that she was in a state to warrant us in diminishing the quantity of stimulants; but on that day the pulse was 120.

On the 4th it was 114, *falling under the diminution of stimulants.* She was discharged quite well on the 4th of December, having been about *nine weeks* under treatment." This case, therefore, warrants the opinion that the excessive amount of stimulants administered tended to the protraction of the fever so greatly beyond the average, and, in fact, to the extreme limit to the duration of enteric fever, of which form this seems to have been an example. But, it may be objected, the case did well; to which we reply, that young persons under fifteen years of age get well of *typhoid* fever, as a rule; and, as regards the protraction, there is nothing whatever in the history of the case to account for it but the violent efforts "to uphold vital and nervous power." The fourth case, a boy aged 15, of infinitely greater severity than the one just mentioned, who lost a pint of blood at stool two days after admission, was first treated with five or six drachms of wine every hour; after the hemorrhage, brandy was substituted for the wine. Afterwards, as the blood continued to flow, and signs of great prostration appeared, the brandy was increased to an ounce every hour. On the tenth day of the treatment convalescence began to appear. Here, then, was a boy one year older than the previous case, who, having suffered from a great hemorrhage, did very well, and recovered quickly under one-half less brandy, and that only administered at all after the loss of a pint of blood had occurred. The fifth case, a woman, aged 36, also one of great severity, had serious hemorrhage by stool. Half an ounce of brandy was given every hour; this was afterwards increased to six drachms. She recovered satisfactorily, and was discharged in the sixth week after admission. The sixth case also passed blood *per anum*, and had other severe symptoms. The subject of the case was a man, aged 20. At first wine was administered in half ounces every two hours. Afterwards, a third of an ounce of brandy was given every hour. This is the maximum of the stimulation. Nine days after admission he was much better; seventeen days after that event, "he was up and convalescent." Nothing could be more satisfactory than the termination and the shortness of duration of this case, greatly promoted, in our opinion, by the moderation with which stimulants were given. Eight ounces of brandy per diem to a patient labouring under intestinal hemorrhage with fever, with tongue half protruded, tremulous, and brown, and taking little notice, is not a greater amount of stimulant than almost every physician in these countries would deem himself justified in giving. The seventh case, a woman, aged 39, died four days after admission; stimulants are not men-

tioned in the record, we presume from an oversight. The eighth case also died, age not given, and the treatment omitted. The ninth case, also of enteric fever, was a nurse-maid, eighteen years of age. The chief characteristics were drowsiness, puffed face, suffused eyes, headach, white tongue, skin hot and dry, diarrhœa, bronchitis, with expectoration of scanty, viscid mucus, of rusty tinge. Six drachms of brandy were ordered every second hour, three days after admission. On the following day she was extremely drowsy, and unwilling to be disturbed. The brandy was increased to an ounce every hour. The same symptoms continued on the fourteenth day of the disease, on which day, and at a subsequent period, she is declared "to have shown a great aversion to the brandy." There was no material change on the fifteenth and sixteenth days of the disease. On the seventeenth she seemed more prostrate; the brandy was increased *to an ounce every half hour*,—two imperial pints and eight ounces per diem to this youthful nurse-maid! No improvement was noted the next day. Profuse liquid evacuations recurred from time to time, and she remained very drowsy. On the nineteenth day there was an increase of the catarrhal sounds; she became more drowsy; her head was therefore shaved. On the twentieth day of the disease "a profuse perspiration, in all probability critical, burst forth," and a very decided improvement took place; the eruption had disappeared from the skin, and the brandy being reduced from an ounce to six drachms, the drowsiness passed off. On the twenty-eighth day of the fever the pulse fell rapidly. On the forty-eighth she left the hospital quite well.

The author appends the following remarks to this case:—

"You will not often meet with so severe a case as this ending in recovery. I cannot but believe that the favourable result was owing to the steady exhibition of support of all kinds, especially of stimulants, from the earliest period of the disease. Still, it is curious to observe, how, about the twentieth day, a marked favourable change took place, and was accompanied by a profuse sweating, apparently of a critical nature."

This case appears to us to have been a precisely representative example of that particular combination of symptoms and conditions which necessitates the restricted employment of alcohol. There were three local lesions, all such as, more or less, to negative profuse stimulation. In reference to the brain and nervous system, we mark the *absence of delirium*, a symptom in which the author reposes so much confidence as indicating the need for stimulus—the absence of subsultus ten-

dinum, jactitation, tremors; the presence of drowsiness. In reference to the thoracic viscera, we note an irritative catarrhal condition, with "expectoration of scanty viscid mucus;" the respirations being once mentioned as 38, once 48 in the minute. There is no allusion to feebleness of the central organ of the circulation. Twice only is the pulse mentioned previous to the day of crisis, the first time as being only 108, the second 116. In reference to the abdomen, the diarrhœa consisted of "profuse liquid evacuations" without any blood—such evacuations as probably the 48 oz. of alcohol daily aided in maintaining. There was considerable tenderness of the belly; but that nearly constant feature of profound adynamia, a tympanitic state, is not mentioned. Finally, she was a young girl, aged 18, labouring under the enteric form of fever. Did she obtain benefit from the stimulus so adventurously proffered, so repeatedly taken "with disgust"? Is there one single point which shows that the symptoms were alleviated?—the course of the disease modified by the measures adopted? None whatever. In the week, about the very day when cases of enteric fever are apt to show an amelioration, a crisis of a marked nature arrived in the shape of profuse perspirations. One of the natural processes of evolution of disease, so much talked of by the author, took place. What had the brandy to do with the hastening or promotion of this termination? Dr. Todd seemed half conscious of the real truth, when inditing the *naive* remarks we have just quoted. But we are called on to state our belief, that about the twentieth day of her malady this nurse-maid had a happy natural crisis, in which, though overwhelmed with the poison of alcohol, the salutary beginnings of improvement became first manifested.

We have analyzed these cases to little purpose, if our readers have not already observed that Dr. Todd's success in combatting the phenomena of fever by no means bears any proportion to the amount of stimulants administered. Let it never be forgotten that all these cases were *enteric fever*, in which there is a far less need for stimulants than in the typhus, so familiar to us in this country. Of the nine cases, four died. We have not space to analyze the remainder, most of which are examples of enteric fever; one appears to have been a specimen of the coexisting typhus and typhoid states. This is the general result of the total number, including those we have analyzed. Out of twenty-four cases, eleven died! Now, we are willing to believe that, to meet the exigencies of clinical instruction, fatal cases may have been introduced to the notice of the class in larger proportion than those with a favourable issue. But

this does not appear on the face of the record; we mark that disastrous results, to a very unusual extent, occurred. We are familiar with the Irish and Scotch typhus. We are still more familiar with the English enteric fever. No such results as these ever came under our eyes in the Dublin fever-sheds in the terrible year of famine; in the crowded wards of the Edinburgh Royal Infirmary in 1848; in the wretched courts or the ill-adapted hospital wards of the great towns of England. This book was written to prove the dominant necessity of "upholding vital power," and of effecting this by alcohol. Dr. Todd's case-books may show another result; but that which appears here leaves us in no doubt that the validity of this doctrine, so far as regards continued fever, *is not proven.*

The sixth lecture is devoted to erysipelas. The seventh takes up the interesting subject of erysipelas of the fauces, and is well worthy of perusal. The malady is admirably described.

"The force of the poison seems to fall upon the pharynx, and to paralyze it, and it must do this, either by benumbing the sensitive nerves, through which the muscular contractions are usually excited by the contact of food, or by extending to the muscles themselves and paralyzing them directly; or, it may be, in both these ways. If you look into the throat of a patient labouring under this affection, you will find the pharyngeal mucous membrane exhibiting a peculiar dusky-red colour, the fauces will be perfectly open, and you will be unable to discover any mechanical impediment to free deglutition; and if now, with your finger, or a pen or probe, you touch the back of the pharynx, you will find that none of the pharyngeal muscles are thrown into action, as they invariably are in a state of health; in other words, you cannot excite the reflex actions necessary for deglutition; and if you give the patient something to swallow, as soon as he gets the liquid or solid, whichever it be, upon the back of the tongue, instead of its being grasped by the contraction of the muscles of deglutition, and guided, as it were, into the œsophagus, in consequence of the complete palsy of these muscles, it falls by its own gravity into the larynx, and is thence immediately ejected, by a powerful expulsive effort, through the mouth and nostrils."

The application of nitrate of silver to the fauces, the administration of food and stimulants, if necessary by the rectum, or by means of the stomach tube, constitute the treatment recommended, and which is very well illustrated by the cases adduced. Sometimes this condition is complicated by œdema of the palate and pharynx. One such case occurred to us where the patient was in imminent danger of suffocation, but it was arrested by free scarification of the parts, followed by the application of strong caustic solution.

The eighth lecture, on "the treatment of acute internal inflammations," is reprinted from Dr. Beale's Archives of Medicine. It is a summary review of the author's mode of treatment and general doctines. The discussion is *apropos* of the case of a young woman, aged 19, labouring under rheumatic fever, endo-pericarditis, and pneumonia; she was treated with brandy and opium in great quantity, and recovered. The details of the case are not so fully and systematically given as to enable us to form a judgment how far the measures adopted contributed to the favourable issue. It is affirmed that, inasmuch as recovery takes place in pneumonia, either through the non-completion of the solidifying process, or by the rapid removal, either through absorption or a process of solution and discharge, of the new material, which had made the lung solid—the measures ordinarily within our reach do not exercise a *direct* influence in effecting these changes. We may not be able to exercise "a direct influence" on the solution of the exuded materials, but assuredly the medical art is able to step in not unfrequently, and prevent the non-completion of the solidifying process—and in a manner the most direct. Not nearly by, but, so far as we can judge, in the very mode denied by Dr. Todd, by stopping the supplies. But with the school, of which he was so eminent a member, exudation is inflammation, and inflammation is exudation—given then vascular excitement, the first stage, the other stages must follow by necessity. The generation of some peculiar morbid poison is never absent from Dr. Todd's mind. "These acute internal inflammations are very often, I suspect always, connected with the prominence of some peculiar diathesis." So it follows that internal inflammations are cured, not by the ingesta administered, nor by the egesta promoted by the drugs of the physician, but by a natural process, &c. If the patient in question had been bled to twelve or sixteen ounces, and taken tartar-emetic freely, it is declared without scruple that "the hepatized lungs would have remained hepatized."

It is made a matter of complaint that other reasoners take into account only two of the phenomena of inflammation, the heat and afflux of the blood, without taking into consideration both the exciting and the proximate cause of this heat and afflux of blood. To us this seems quite natural—as we know next to nothing both of the one and the other—and there is no doubt of the heat and blood-afflux. How does the author account for the heat? The exigencies of his doctrine compel him to assume that the active chemical process which accompanies the changes in exudation "engenders the great heat of the in-

flamed part." But the heat of parts is greatly augmented where there is no exudation—in blushing—in some erratic superficial forms of erysipelas—in the very initial stage of vascular erythism in numerous local disorders, in various physiological processes well known in the lower animals; of the "active chemical process" mentioned, we have no knowledge whatever; of these facts we have demonstrative evidence. According to the author, we must "feed inflammations" as other active vital processes, and as we cannot cure an inflamed eye so long as the irritating particle of dust remains adherent to it, so, in acute inflammations, we must try and gain time by antidotal means, "or by elimination of the local irritation, *whatever that may be.*" This last qualification is a serious difficulty[a].

The particular patient was not troubled with delirium. "This is uniformly the case in acute diseases, erysipelas, fever, pneumonia, rheumatic fever, in which alcohol is given, as has been done in this case; delirium is kept off by it." Finally, of stimulants it is averred that the harm which they do (*in disease*) is grossly and unfairly exaggerated, *and always due to the slovenly administration of them.* These are bold statements, which we must leave to the individual experience of our readers.

The ninth lecture deals with pyemia, a fatal malady, calculated to severely try the acuteness of the physician. We regret to observe that Dr. Todd has been unable to throw any light on this subject. All the cases of undeniable pyemia here recorded died, although nothing appears to us to have been left undone, in the way of stimulation, to bring about a different termination. There is no blame to be attached to the author or to the treatment. Stimulation to an unlimited degree is the order of the day in this disease, and the more or less gradual progress to death is equally the "regular thing." But there are three cases which recovered, where the existence of the genuine pyemic state admits of question. The first, a young man, having suffered from gonorrhœa and perineal abscess, becomes attacked with what looks like rheumatic fever, pleuro-pneumonia, and two or three abscesses in various parts of the body. He was admitted on the 27th of March, having been ill for about a week, and was not discharged until August, and then "for a convalescent institution." He was submitted to alcoholic stimulation. The second case, one

[a] In reference to the morbid principles causing disease, M. Claude Bernard declares, that "in the present state of our knowledge, we possess no means whatever of *neutralizing their action.*"—*Lectures at the College of France, Medical Times, July* 14, 1860.

of the surgical nurses of the hospital, was attacked with inflammation of the right thumb. Pus formed in the palm of the hand and at the back of the wrist, and the exit of this pus was attended with the most marked relief. She complained of pain in the joints, but there is no evidence of general pyemia. All the symptoms seem strictly referable, as is so familiar to surgeons, to the local inflammation and pent-up matter. She was treated freely with brandy and opium. The precise day of the beginning of this disease is not noted, but on the 30th of April it is plain that she had been ill, and under treatment for some days. She was discharged on the 28th of June, "with, of course, considerable impairment of the hand and arm. This patient had altogether about 31 pints of brandy, or about an average of a pint a day, for a month." The third case is preceded by an expression of regret that the treatment was not such as the lecturer would recommend at the period of the lecture. "It amounted, in fact, to almost nothing, excepting the local measures, and to this I attribute the very tedious character of the illness and the slow convalescence." The subject of this case was a woman, aged 32, attacked on October 6, 1845, with shivering and a red swelling of the left hand and arm. The joints became swollen, red, and painful. The right arm swelled, and was covered with a blush of erysipelas. Purulent pellets were coughed up. The left leg also showed erysipelatous redness. The limbs were placed in splints. On the 8th of November, an issue was established over the right wrist, and, some time later, a second. About the 21st of November the patient began decidedly to amend. The local symptoms subsided, and on December the 31st she was discharged cured. "At first the joints, as one might have expected, were somewhat stiff and useless." This was certainly a very severe case, and strongly reminds us of pyemia, though we do not think that this condition existed, for reasons we cannot now detail. But on what ground does the author lament that he had not given brandy? The first case under brandy went on for about five months, and then left for a "convalescent institution." The second, with 31 pints of brandy, existed for at least two months, and finally there was "considerable impairment of the hand and arm." This third case existed for two months and twenty-five days; the joints being at last somewhat stiff and useless. Thirty-nine days before her discharge "she began decidedly to amend." We find no proofs here of the utility of the alcohol. The cases treated with it, the case which went through the "natural process" without it, do not appear to have been much modified by the pre-

sence or the absence of that agent. But this remark applies more generally than to these illustrations of disease. Is the enormous amount of stimulant administered to such cases and to pyemic patients properly so called, attended with a beneficial result? We will not speak of a *curative* result, in reference at least to the latter; but have we any proof that brandy, a costly item of hospital expenditure, exercises the slightest influence of a favourable nature over the sad course of the malady? Our own observation compels us to answer this question in the negative; for some of the most satisfactory results we have witnessed in allied disorders, such as those under which these three cases laboured, have been obtained when only the most moderate amount of stimulant was accessible,—we mean among the lower classes outside the hospitals.

The next four lectures are devoted to pneumonia and its complications. This disease has been often made the turning-point of medical philosophy, the touchstone of practice. These lectures, therefore, demand the most careful analysis.

The author lays down *in limine* the basis of his practice, which consists in promoting certain excretory functions, especially those of the skin and kidneys; in active stimulation of the skin near the seat of the inflammation; and in upholding the general powers of the system. We were not a little surprised, remembering the preface, to find the author declaring: "I fully recognise and admit the practical value of the distinction between the two classes of pneumonia; the one sthenic, the other asthenic and typhoid;" though the distinction, according to his views, ought to be differently expressed. The local inflammation is said to draw so largely upon the rest of the system, "as to depress the general powers of life." On the other hand, the greatest living authority on this disease, Grisolle, declares that of all moderately grave febrile maladies, pneumonia is one of those which least prostrates the strength"[a].

The following is an analysis of all the cases given by Dr. Todd:—

Case 1: aged 28; single pneumonia of lower lobe; admitted on the third day of disease; amendment on the sixth and seventh days; convalescence on the 14th. No stimulants administered. Treatment—turpentine, stupes, leeches, blisters, aperient medicine, and citrate of ammonia.

Case 2: aged 17; single pleuro-pneumonia of lower lobe; admitted on the third day of disease; amendment on the 6th; confirmed on the seventh day. On the 14th the patient

[a] Traité de Pathologie interne, vol. i., p. 356. Fourth Edition.

left the hospital quite well. No stimulants were given. Treatment the same as first case.

Case 3: aged 11; admitted on the fifth day of disease. Single pleuro-pneumonia of lower lobe. Respirations fell from 44 to 30 on the seventh day of disease. Rapid recovery. No stimulants ordered. Treatment essentially the same as before.

Case 4: a girl aged 17; admitted with intense rheumatic fever in November, 1851, having been ill only one day. Double pleuro-pneumonia and endo-pericarditis came on. "In nine days from the commencement of the symptoms, we find a case of double pneumonia; pleurisy and pericarditis had run its course, and the subject of it been conducted safely towards convalescence." On the nineteenth day of the rheumatism "all the joints were free from pain." No stimulants allowed. Alkalies, opium, mild aperients, calomel, blisters, turpentine stupes.

Case 5: aged 20; admitted on the sixth day of the disease in 1851, labouring under acute rheumatism, double pleuro-pneumonia, and endo-pericarditis. Died on the twenty-third day. Wine first given on the twelfth day, and gradually raised from three to eight ounces per diem. Treatment otherwise same as Case 4.

Case 6: aged 11; admitted on the fourth day of disease. Half an ounce of brandy every two hours, ordered on day of admission. Resolution on the ninth day of disease; nearly complete on the eighteenth. On the twentieth day relapse both of fever and local state; on the twenty-third day respirations reduced, but dulness still existed. Recovered. Pneumonia, single.

Case 7: aged 6; admitted apparently on day of attack. Single pneumonia; began to improve about the eighth or ninth day; three days previously two drachms of wine ordered every hour, "the child had been fond of spirits." Reported "convalescent" twenty-one days after admission.

Case 8: aged 36; complicated with typhoid fever; brandy (half an ounce every hour) administered: recovered.

Case 9: a "little" boy, age not given, applied as an outpatient on the third day of disease, but evidently about four or five years old. Single pneumonia; on the ninth day of disease marked amendment; on the tenth he was convalescent. He was treated at first for four days on quarter-grain doses of tartar emetic every four hours. On the day of admission, the seventh day of disease, two drachms of wine ordered every four hours. The next day the pulse came down 20 beats, and the respirations diminished by twelve.

Case 10: aged 48; "not distinctly intemperate;" single

pleuro-pneumonia; admitted on the fifth day of the disease. He was put *at once* upon half an ounce of wine every four hours. On the eighth day he was worse, and was ordered half an ounce of brandy every hour. The patient declined, and died on the eleventh day. The kidneys were unsound.

Case 11: aged 20, "of very intemperate habits;" admitted on the fourth day of the disease. Single pleuro-pneumonia of lower lobe; half an ounce of wine was ordered every third hour on the fifth day; on the sixth he began to sweat, and the respirations and pulse became greatly reduced; on the seventh sweating continued; gradual amendment took place, and he was discharged on the seventeenth day of the disease[a].

We have now the serious duty of drawing attention to the general and detailed success obtained by Dr. Todd in dealing with this important disease. Here are eleven cases: one was a case of pneumonia occurring in the course of typhoid fever. Of the remaining ten—some simple, others complicated—two died—one in five. Is this success? Scarcely such a failure is to be found recorded. Of the ten cases, nine are below thirty years of age. The French statistics quoted by the author, and so well known, show that the point most influencing the mortality is the age. From fifteen to thirty, in 116 cases, there were eight deaths, scarcely one in fourteen; from thirty to forty, the number of fatal cases amounted to one-seventh of the whole; from forty to fifty, to one-sixth; from fifty to sixty, to one-fifth. Excluding the case of pneumonia in typhoid fever, which recovered, there is one only in this record above thirty, and he was 48. He died.

Another point influencing the mortality is extent of disease. Nine of these cases are examples of single pneumonia, for the most part affecting the lower lobe only; of the two fatal cases, one was single pneumonia.

A third point, exercising a remarkable influence on the result, is the period when they first come under treatment. "The mortality of the disease steadily increases with each succeeding day it has been allowed to run its course uncontrolled. The statistics of Grisolle, referring to the treatment by moderate bleeding and tartar emetic, show that, while the mortality among those seen and treated within the two first days is only one-thirteenth, it rises among those whose treatment does not commence till the eighth day, from one-third to one-half of the whole number"[b]. These cases were placed

[a] It is right to state that the 7th and 8th cases were treated by colleagues of Dr. Todd.

[b] A Practical Treatise on the Diseases of the Lungs, by Dr. Walshe, p. 384. London: 1860. Third Edition.

under treatment at the following periods:—two came on in the hospital while under treatment for other disease; one, apparently, on day of attack; three on third day; two on the fourth day; two on the fifth day; one on the sixth day. The treatment of not one commenced so late as the eighth day, when, according to Grisolle, the mortality approaches that arrived at by Dr. Todd.

But the author alludes to his general results, so as to give us a complete idea of his success, to which he refers with evident gratification. Now all statistical statements in which the minute details are withheld are nearly useless. We can roughly compare, however, one general numerical ratio with another, and so form some sort of notion of a given author's success. How do published statistics support Dr. Todd's views? The total number of cases which occurred under his care in the hospital, from 1840 to 1859, amounted to 78: ten were fatal. We will call it one in eight. Bouillaud's success with the *coup sur coup* bleeding is the same. What a satire on the method so energetically enunciated! The 78 cases are arranged in two periods: the first from 1840 to 1847; the other from 1847 to 1859. The author calls the first "the period of reducing treatment;" the second, "the period of supporting treatment." Twenty-five occurred in the first period; one died in every six. Fifty-three cases occurred in the second period; one in nine died. It is remarkable that the two fatal cases among the eleven we have been analyzing occurred "in the period of supporting treatment;" one in 1851; the other in 1854. But let us take the most favourable period. Six died out of fifty-three; the per-centage of mortality is 11·3. "Skoda, drawing not a drop of blood, employing solely extractum graminis, or a few grains of nitre, and, in some instances, corrosive sublimate, lost three only of 45 patients; but the mean age of the series was only twenty-five and three quarters years" (Walshe, *op. cit.*, p. 384). We, of course, cannot compare the ages of patients not given in detail by Dr. Todd; but the mean age of the eleven analyzed is twenty, the critically favourable age for pneumonia. Varrentrapp's treatment by chloroform, including severe cases treated on other plans, shows a per-centage mortality of 11·5, all but identical with Dr. Todd's most favourable results. The treatment by "diet" in the hands of Ditl of Vienna was attended with a mortality of one in thirteen and a half, or a per-centage of 7·4. Dr. Bennett declares that the mortality under "moderate bleedings" is about one case in seven; but that a treatment directed to further the natural progress of the disease, as I have explained

it, has been in my practice one case in twenty-one two-thirds[a]. What is the "natural progress," and what the practice of this latter pathologist? He is in categorical issue with Dr. Todd on the mechanism of the natural process; and his practice consists in either giving no stimulants, or in giving them with *extreme moderation*, such as the author would have considered mere trifling. Wine is Dr. Bennett's favourite stimulus. Brandy occupied the same place in the affections of his eminent London contemporary.

Statistics, then, do not support the opinion that Dr. Todd has opened up a new and better path in the treatment of pneumonia. We must now take a nearer view of the cases analyzed. The first four cases had no stimulants; they all got well; amendment took place on the seventh day in three, and in one of these, on the sixth, improvement was noted. In the remaining case, a mass of internal acute inflammation had run its course in nine days from the commencement of treatment. The fifth case was stimulated on the twelfth day; death took place. The sixth case, a young boy, was intensely stimulated with brandy on the day of admission—the fourth day; resolution occurred on the ninth; not complete on the eighteenth; a relapse on the twentieth day; on the twenty-third, dulness still existed! The seventh case, a young lad, admitted at the beginning of the disorder: on the fifth or sixth day of disease wine ordered every hour; began to improve on the eighth or ninth day; not convalescent until twenty-one days after admission. The eighth is the case complicated with typhoid fever. The ninth, a young boy: treated for four days with tartar-emetic; on the seventh day of disease, two drachms of wine ordered every four hours (an ounce and a half in the twenty-four hours); the next day, marked amendment. The tenth was ordered wine on the fifth day of the disease, brandy on the eighth; he died on the eleventh. The eleventh, of intemperate habits, was ordered four ounces of wine in twenty-four hours on the fifth day of disease; on the sixth he began to sweat; and on the seventeenth day was discharged well. There is but one inference possible from these cases: those who were not stimulated at all did the best, and got well the soonest; those who were moderately stimulated come next in order; those who were greatly stimulated either died, or the "natural process" of cure was much retarded. Two only had brandy: one died; in the other, a child, resolution was not

[a] The Principles and Practice of Medicine, p. 642. Second Edition.

complete on the eighteenth day of disease, and on the twentieth a relapse occurred. In this latter survey we exclude the typhoid case, which was also treated with brandy. But, again,—those who did well under stimulants, not only had them in extreme moderation, but showed improvement at such a period—both in reference to the disease, and to the first administration of the stimulant—as to forbid the belief that a beneficial influence was exercised by it. This is particularly to be noticed in the ninth and eleventh cases. On the seventh day of the disease, in the former case, one and a half ounces of wine per diem were ordered; the *next day* the pulse and respirations came down. Four ounces of wine per diem were given on the fifth day in the latter case; the *next day* he began to sweat, and the respirations and pulse came down. Now Dr. Todd admits that about the seventh day there is a natural tendency in the disease to arrive at a crisis.

Let us compare the four cases under twelve years of age. Case 3, without stimulants, showed amendment on the seventh day. Case 9: a minute quantity of wine on the seventh day; showed marked improvement on the eighth day. Case 7—but little older than the last—began to improve on the eighth or ninth day; ordered more than three times as much wine as Case 7, three days previous to improvement. Case 6 had six ounces of brandy per diem; resolution began on the ninth day; not completed on the eighteenth; subsequent relapse—*both in fever and local state.*

But we desire, in a very special manner, to draw attention to the *fourth case* analyzed. It was a case of extraordinary severity: acute rheumatism, double pleuro-pneumonia, and endo-pericarditis co-existed. The result was most creditable to the physician; in nine days the acute internal inflammations had run their course; no stimulants were administered.

Now let us confront Dr. Todd with himself. We have already alluded to the seventh lecture, "on acute internal inflammations," the basis of which was the case of a woman, aged 19, who suffered from acute rheumatism, double pleuro-pneumonia, and endo-pericarditis. There is a peculiarly triumphant tone about this lecture, so that it attracted great notice at the time of its first publication in another shape. It is, indeed, the cardinal lecture of the volume, delivered in 1857, containing the deliberate expression of the author's ripest experience. First, two, then four, then six drachms of brandy were given every hour to this patient; about the fifth or sixth day signs of hepatization had disappeared; on the sixteenth day signs of effusion "were at their highest point;" on

the twenty-fourth day the patient was fairly convalescent, just twenty-three days from her admission. She left the hospital, "quite well," forty-four days after admission. Case 4 left the hospital "quite well" on the twenty-ninth day, counting day of admission and day of discharge. Here, then, are two cases of the same sex—nearly of the same age; both treated from the beginning of the disease; one is treated largely with brandy, the other has none; both get well; the first is discharged in forty-four days, the second in twenty-nine. The author alludes to the "rapid recovery" and the "rapid convalescence" of the first; and in set words ascribes this last to the "upholding plan" adopted. To what, then, are to be ascribed the more rapid recovery and the more rapid convalescence of the second? Either the first should have been allowed to pass through the disease without brandy, or the last, on Dr. Todd's principles, was singularly carelessly treated—the brandy being omitted. We must confess that the comparison of these two cases has more strikingly affected our mind than anything else in the book. It indeed speaks most eloquently against the stimulation plan advocated in the seventh lecture.

It is hardly necessary to state that Dr. Todd's aversion to blood-letting in pneumonia is such as almost to preclude its use altogether. We cannot discuss fully this question, but must allude to one statement. "Notwithstanding early bleeding, the lung becomes fully hepatized; nay, I would go so far as to say that, in some cases, it favours hepatization by relaxing the blood-vessels, and permitting a more ready transudation of the liquor sanguinis." This latter averment is certainly opposed to all theory and all experience, and seems to us to approach the impossible. The lung certainly becomes hepatized, notwithstanding bleeding, but neither brandy, expectation, nor diet has a better effect. It does not follow, because the lung becomes hepatized after bleeding, that the loss of blood either promoted the solidifying process or produced mischief. Twenty-nine thirtieths of all cases of pneumonia do pass on into the hepatization stage. For ourselves, we thoroughly agree with Dr. Walshe: "we are simply in a period of reaction from the excesses of the Sangrado school. We have learned from our predecessors the evils of *over-bleeding*, and seem, in my opinion, very much disposed, at the present day, to learn from ourselves the evils of *under-bleeding*."—*Op. cit.*, p. 381.

Our own views of the brandy treatment may easily be inferred from previous remarks, but we cannot state them in more fitting language than the same accomplished physician has done, doubtless in reference to the late King's College Profes-

sor. "The announced success of the treatment by copious libations of brandy appears simply to furnish a fresh illustration (as conversely Bouillaud's alleged triumphs by his *soignées coup sur coup*, in genuine 'typhoid,' Peyerian fever) of the wondrous power of the *vis medicatrix naturæ*"[a].

The concluding lecture is upon "the therapeutical effects of alcohol," which we will venture to call a misnomer. "Poisonous effects" would have been a more correct term, as the main cause of the lecture was the case of a child, three years old, admitted into the hospital, labouring under the effects of the administration by her mother, at one dose, of $2\frac{1}{2}$ oz. of gin. Convulsions came on, and left hemiplegia. On the day after admission the patient was becoming exhausted, so a teaspoonful of wine was given every second hour. The next day she was worse; on the fifth day she died. The brain was found to be very pale. What is the author's commentary on the case? Here are the last three sentences of this remarkable man's last book:—"Were I to treat such a case again, I would give wine or brandy more freely than was done in this instance, and I would also administer by the rectum quinine with a small quantity of brandy. You will find this often a very useful practice where the powers of life are low, and it *ought not to have been omitted in our little patient's case.* But she showed so little power of reaction, that it is in the highest degree improbable that any further treatment would have been successful." The end! We see here the influence of a ruling idea. Exhaustion, no matter how produced, seemed to the author in nature one and indivisible, and suggests alcohol as a matter of self-evident necessity, even when brought on by alcohol.

Case 91, recorded in this lecture, was a woman, aged 42, who, after drinking hard for two days, without taking food, was attacked with delirium tremens. Opium and brandy were freely administered; but on the seventh day she was so ill as to require restraint. On the eighth day the patient was still violent, in spite of large doses of opium. Under chloroform relief came, but she only "slept soundly" on the fifteenth day. Here, too, the action of the poison which produced the disease was energetically maintained by the physician. Brandy was administered, evidently as the routine remedy, on the day

[a] In alluding to the alcoholic treatment of disease as "*incendiary medication*," Dr. Lasègue says: "Dr. Todd, of regrettable memory, has held, and pretended to prove by practice, that alcoholic drinks are among the most active remedies in inflammatory states: he has not hesitated to prescribe sherry, and even brandy, in high doses to patients attacked with pneumonia and other acute phlegmasiæ; and, at least, we may infer from his essays that alcohol administered below actual toxic doses is less perilous than we supposed."—*Archives Générales de Médicine, July*, 1860, p. 86.

of admission, though there is not a word said of weakness, prostration, and so forth. She was labouring under the representative symptoms of the poisonous effects of alcohol in certain quantity. No one can be conversant with the researches of Peddie, Laycock, and many others, both before and since their time, without concluding that, had this woman been placed in a large room, with two strong nurses, without a doctor, there is a high moral probability that about the fifth day of the disease she would have slept off her debauch.

We will not profess that we have given our readers a complete view of all that is valuable in this book. Far from it. Our object has been to afford them a glance of the scope and tone of the volume. It is filled with sound remarks on the natural history, diagnosis, and detailed management of disease; but we have felt it to be our duty to pass over these, being more or less recognised, and confine our attention to that which specially characterizes the book—its opposition to the generally received maxims relative to the treatment of disease. All will admit that Dr. Todd was the most eminent defender of the school of stimulation, and that his enthusiasm in the cause enabled him to exercise no ordinary influence over his pupils and his brethren. In criticising him, we select the most able and the most distinguished of the school.

But we must not part from the author without the expression of our admiration for his rare devotion to the duties of an hospital teacher, his unswerving honesty of purpose, and for his great gifts both as a physiologist and physician. In the former of these capacities, his valuable services in the cause of science deserve more gratitude than we can here fully give utterance to. Happily, we have in the "Cyclopædia" and "Physiological Anatomy," imperishable monuments of his rich endowments and unbounded industry. With all our differences of opinion on points of practice, we can still sorrowfully declare—"Heu! quanto minus cum aliis versari, quam tui meminisse."

On Diabetes and its successful Treatment. By John Camplin, M. D., F. L. S. Second Edition. London: John Churchill. 1860. Small 8vo, pp. 88.

The above little work has the advantage of having been written by a gentleman who, in his own person, laboured under the formidable disease of which it treats. The author experienced the greatest benefit, both in his own case and in the treatment

of his patients, from the substitution for ordinary bread of bran cakes; the peculiarity of the latter being, that the constituent bran was employed in a state of extremely fine division, in order to prevent any irritating effect upon the bowels. The following is the formula for the preparation of the cakes:—

"Take a sufficient quantity (say a quart) of wheat bran; boil it in two successive waters for a quarter of an hour, each time straining it through a sieve; then wash it well with cold water (on the sieve), until the water runs off perfectly clear; squeeze the bran in a cloth as dry as you can; then spread it thinly on a dish, and place it in a slow oven; if put in at night, let it remain until the morning, when, if perfectly dry and crisp, it will be fit for grinding. The bran thus prepared must be ground in a fine mill, and sifted through a wire sieve of such fineness as to require the use of a brush to pass it through; that which remains in the sieve must be ground again until it becomes quite soft and fine. Take of this bran powder three ounces, three new-laid eggs, one and a half ounces of butter, and about half a pint of milk; mix the eggs with a little of the milk, and warm the butter with the other portion; then stir the whole well together, adding a little nutmeg and ginger, or any other agreeable spice. Bake in small tins (pattipans), which must be well buttered, in a rather quick oven, for about half an hour. The cakes, when baked, should be a little thicker than a captain's biscuit; they may be eaten with meat or cheese for breakfast, dinner, and supper; at tea they require a rather free allowance of butter, or may be eaten with curd or any of the soft cheeses."

The efficacy of rennet in diabetes is well known. A gentleman in Australia having derived benefit from the use of pepsin, and being unable to procure a further quantity of the remedy, had recourse to an expedient which he thus describes:—"I got three calves' stomachs, had them well cleaned, then made them into thin sausages, well smoked; and after putting them in hot water for fifteen minutes, hung them up all night over the fire in the kitchen. I took about an inch and a half morning and evening with my meals, and in a month diabetes was gone, and I am now perfectly well, weighing 16 stone 3 lbs.—within 6 lbs. of my usual weight. On putting a small piece of sausage in new milk, it coagulated—a proof of its medicinal quality being preserved. The sausages are quite a relish for tea and breakfast."

The reader will find much information as to the medical and dietetic treatment of diabetes in Dr. Camplin's practical little volume.

Conférences de Clinique Chirurgicale faites a l'Hotel Dieu pendant l'Année 1858–1859. Par M. A. C. Robert, Chirurgien de l' Hotel Dieu, &c. Paris: Germer Baillière. 1860. 8vo, pp. 542.

This book consists of clinical lectures delivered at the Hotel Dieu, in the session 1858–9. The subjects are various enough, and present no attempt at classification. The style is, however, agreeable, and much information of a practical nature is scattered through the volume. We remark with satisfaction a considerable acquaintance with English surgery, though the quotation of opinions is not always exact; and the general phrase of " les Anglais" is often deemed enough.

In dealing with artificial respiration there is a remarkable omission of Marshall Hall's name; and, from all that appears in the book, his method may be unknown to M. Robert. This is the more unaccountable, as Marshall Hall is generally a favourite authority with French surgeons. We have heard his name more frequently in the schools than that of any other Englishman, and, as is well known, he had intimate relations with many of the more eminent Parisians.

The opening lectures of the book are devoted to the full consideration of anæsthesia. The subject is systematically handled, and is full of useful information, but adapted rather for students than for our readers. There are, however, a few points on which we found it not amiss to refresh ourselves, and some of these we shall quote for their benefit. Having drawn attention to the value of anæsthesia in the reduction of luxations complicated with fracture, in the taxis, in spasmodic stricture, and in lithotrity ; he shows its use in the diagnosis of tumours in the abdomen. Here we often experience difficulty in determining the nature, or even the existence of a tumour, in consequence of the spasmodic contraction of the abdominal muscles, even in cases where there is no pain. By the use of chloroform this source of error is avoided, and it now strikes us with surprise that we have not more frequently made use of it in doubtful cases. With its importance in determining whether arthralgia is the product of inflammation or of hysteria, we are familiar enough, but it has been little spoken of as a means of detecting malingering, and to this M. Robert draws attention. Speaking of the relief it affords the patient, he gives the following anecdote as illustrative of the effects of fear:— " One day Desault was about to cut a patient for the stone who was very cowardly. He traced the line of his intended

incision on the perineum with his nail; the patient thought the operation was in progress, fainted, and died."

In the lecture on local anæsthesia there is no mention of the vapour of chloroform (as applied by Hardy), nor of the hypodermic injection of sedatives, which is so valuable in neuralgia. There are some sensible remarks on the real danger of anæsthesia, dangers which either exist or are imminent on every occasion of its administration, though skill may render them harmless in the vast majority of cases, and habit may often lead us to forget them entirely. Of the extreme susceptibility of young infants he gives an example. After a hare-lip operation, the child was rendered insensible by the trifling quantity of ether contained in the collodion which was used to cover the wound. He never loses an opportunity of impressing his readers with the necessity of caution, hence it does not surprise us that he recommends an apparatus for inhalation. We are of opinion, however, that his caution is carried to an excess, when it leads him to reject anæsthetics in the operation for ligature of arteries and for hernia. In the latter we have seen the intestine recede spontaneously on the division of so slight a band, that it conveyed to us the impression that much of the ease of reduction was due to the perfect repose of the muscles. His reasons for objecting to its use in hernia are the tediousness of the operation; the debilitating effects of hernia alone on the nervous system, which render it dangerous to superadd the lowering effects of anæsthetic agents, and finally, the trifling pain of the operation. However, he modifies the rigour of his prohibition by allowing the operator to make his incision through the integument while the patient is under the influence of chloroform administered for the taxis. This strikes us very much as a distinction without a difference; and, for ourselves, we should, in the majority of cases, prefer to keep our patient fully chloroformed until the operation was complete, rather than run the risk of disturbance by a premature return to consciousness. We think, too, that he rather overrates the depressing effects of chloroform, and underrates its value in preventing shock.

His objections to its use in ligature of arteries are founded on the value of pain as a means of diagnosis between arteries and nerves in cases where there is a difficulty in ascertaining which may be on the needle; and, secondly, on the danger of sudden spasmodic movements on the part of the patient. There is a certain value in these objections; but not, to our minds, enough to warrant us in rejecting anæsthesia as a rule, though they will lead to caution in the use, and judgment in the selection of fit cases for their use.

We are not satisfied with the chapter which deals with the treatment of syncope produced by chloroform. It ignores Marshall Hall and his method entirely. The best means recommended in it go no further than to draw the tongue forward and to compress the ribs, allowing the natural elasticity of the thoracic parietes to supply the place of the muscles of inspiration, a process that bears as much analogy to the scientific proceeding of Marshall Hall as Watt's primitive steam-engine does to one of Fairbairn's.

We must now pass on to some of the other subjects treated of in this book.

There is a very good practical chapter on fissured anus. This painful affection has attracted the attention of many surgeons; and it is remarkable how, by slow degrees, the treatment supposed to be necessary for its cure has been simplified. Beginning with Boyer, who practised a complete division of the sphincter, we come to Dupuytren, who found it sufficient to deepen the fissure by an incision that divided only a few fibres of that muscle. Most British surgeons follow his practice, and some have obtained credit as its originators. Jobert de Lamballe excises the fissure, a most painful and troublesome operation, and one that requires a long course of subsequent dressing. Blandin tried, by subcutaneous section of the sphincter, to attain the required inaction of that muscle: this, too, is a difficult and painful operation, and is now quite abandoned. Recamier has proposed the forcible dilatation of the sphincter by the fingers or thumb of the operator: this proceeding has been exaggerated by some surgeons, who push the dilatation to the extent of rupturing the muscle. M. Robert shows that this is wholly unnecessary and he makes it evident that it is enough to split the fissure so as to convert it into a fresh wound: the trifling injury to the sphincter keeps it quiet for a few days, and meanwhile the fissure is healed. This proceeding is worth attention: it dispenses with the knife entirely, and so will commend itself to patients; it acts exactly as the operation of Dupuytren does; it has the further advantage of doing away with daily dressings, as it requires no after-treatment whatever, and, if we are to give full credence to M. Robert, it is effectual.

We must here draw our observations to a close, not without regret at the impossibility of giving our readers the benefit of more of the practical hints that are scattered through the volume.

Mind and Brain; or, the Correlations of Consciousness and Organization, with their application to Philosophy, Zoology, Mental Pathology, and Practice of Medicine. By THOMAS LAYCOCK, M. D., F. R. C. S. E.; Professor of the Practice of Medicine and of Clinical Medicine, and Lecturer on Medical Psychology in the University of Edinburgh. Edinburgh: Sutherland and Knox. London: Marshall, Simpkin, and Co. 1860. 2 vols. pp. 404 and 480.

FROM the earliest period of the world, before mankind had even acquired the art of applying appropriate names to the various ideas that floated in their imaginations—when this world itself spread out before their gaze like a vast panorama, must have afforded a series of objects fully calculated to awaken every natural feeling of curiosity, because they were then so little understood, as far as their real and intrinsic natures were concerned; when rational science was in its infancy, and philosophy had imposed no rules to guide the anxious inquirer in his search after truth; when the eye might embrace in their generality, but had no means of comprehending in their absolute strictness, the essential characters of the varied scene in which they had been placed by Providence to enact so distinguished a part;—even then it would appear that man had already commenced his busy work of investigation, labouring to unravel that great and mighty mystery presented by the mind, which, as the regulating principle of our being, leads us to think, will, and act; or, what is still more striking, endues us with the strange faculty of pondering over and analyzing its own immediate attributes, with the influence that each may exercise in the production of cause and effect. But whilst we recognise the existence of this innate thinking principle as a broad and patulous fact, we are at the same time driven to acknowledge that no one has hitherto been able to point out its exact seat, or even pretend to conjecture the actual position which it occupies in the animal economy. Who can undertake to account for the manner in which its impulses are produced, or how they are led to follow each other in wave after wave, like the waters of the troubled ocean? Our knowledge on this subject may be summed up in a very few words. We merely know that a something which we term, by universal consent, the mind, actually exists; that experience has made us aware of many, if not the whole of its leading characters; and, upon those last, philosophers, in their successive generations, have built laws, founded axioms, and framed definitions; but, further than this, we find ourselves nearly in the same position

as that occupied by our forefathers some thousands of years back,—still dark on the one great leading point, without a single glimmering of light to cheer us on our path, or lead us to hope that the darkness which envelopes our understanding in this respect will ultimately be dispelled. True it is, that a purer system of physiology, and a more intimate acquaintance with the cognate sciences, has unveiled many a fact that once appeared to be buried in a state of almost hopeless obscurity, and the ascertained lesions of particular sections of the human system has pointed out to us certain affinities which would seem to throw a shadowy light on this complex and intricate subject; but still they are not of such a nature, or so accurate in their character, as to warrant a full amount of reliance being placed on the deductions drawn from them.

Holding, as it ever must, a paramount place in human existence, it should be a matter of no surprise that the mind, with its various qualities, should always form a subject of speculative inquiry to the philosopher toiling to discover and methodize the agencies by which it is at first actuated, and afterwards directed and governed. The success, however, that may have attended those repeated attempts is, at least, questionable, and it may be fairly doubted whether our knowledge of psychology as a science has advanced at all in the same ratio as the number of volumes that have been recently penned on this topic might lead us naturally to expect. Speaking with all proper candour, we think that it has rather retrograded, and the conviction has often struck us forcibly, that the morbid and mistaken views that have been advocated and maintained by those who are considered to be high and unquestionable authorities on matters of this nature, have led most assuredly to results melancholy, and, in too many instances, deplorably tragical. Men will write—some through the sheer want of something else to do—others to gratify an inordinate self-love, which, in spite of every effort to conceal it, will peep out unconsciously through almost every page that they compose; while many are actuated by the sole and pure desire of endeavouring to improve the moral condition of their fellow-beings, and raising them still higher in the scale of social improvement; but still, all should be extremely cautious in dealing with subjects of an abstruse and dangerous tendency, sedulously to avoid advancing doctrines which may be seized on by those of weaker judgment, and perhaps wrested to purposes far different from what was their original intention. That there are too many grounds to show that this perversion will sometimes occur, has unfortunately been manifested in several events of a very recent date,

and the records of our courts of law will in later years exhibit many and melancholy examples of the psychological mania pushed to excess to screen the transgressor from the punishment he has so richly merited, and, what is still worse, to hold out to others an inducement to a similar offence, by the prospect of the immunity that they have observed to follow acts that clearly deserved a far different fate. The fact of the matter would appear to be, that the pseudo-philosophers of the present day are by far too fond of looking to extreme causes in the commission of any unlawful act, in explanation of simply ordinary cases, and to urge, in extenuation of that act, a deficiency of mental capacity in that one particular respect,—a most dangerous doctrine in the present constitution of society, and one calculated to unhinge the very elements on which it rests, while at the same time it may recoil at any moment on the heads of its abettors, affording, as it does, a ready pretext for crime, and, what is of still greater importance, a readier mode of evading its consequences. In matters of this kind it should always be remembered that a precedent, when once established, be it for right or for wrong, is always most difficult to be overstepped. Like the finger-post to the traveller, it stands prominently forth to guide and direct successive generations in the several relations of life, and, whether it be for good or for evil, there it remains, not invariably achieving the object for which it was at first erected. Circumstances that in one case might have rendered it purely exceptionable, will in a succeeding one be totally overlooked, and the naked fact be alone regarded, apart from any collateral evidence that might tend to modify its nature, and thus the ingenuity of man will be led to torture what was originally intended to be a great boon into what may be regarded as its very opposite.

In the volumes that are at present lying before us, "The Mind and Brain; or, the Correlations of Consciousness," we feel that Dr. Laycock has done very good service indeed to mankind by instilling by actual example the mode in which this subject ought to be handled, and, in fact, rendered of benefit to all, by the inculcation of views at once sound and philosophical. He has practically shown that the interest can always be sufficiently kept alive without any undue appeal to our morbid sensibilities, while, in his attempt to methodize what is almost universally admitted to be true with respect to the doctrines which it is his object to elucidate and impress, he has displayed an amount of reasoning power, and a depth of information most highly creditable, in whatever light it may be regarded. Still more—unlike too many others who have

devoted themselves to those pursuits of metaphysical research —he has completely avoided that obscurity of diction which veils in a mass of words the tenor of the sentiments which it it is their object to convey; his thoughts on the contrary, being always clear and easy to the comprehension of all. In his preliminary dissertation on method, with which his work commences, we have a perfect model of pure and classic composition, replete with observations calculated to guide and direct the inquirer in his search after truth, by pointing out the true and legitimate path by which that object is only to be attained; and his precepts in this respect appear to be so truly admirable that we are tempted to hazard a brief quotation as a proof of their excellence. After instilling the great principle that in investigations of this nature, the laws of action peculiar to the brain and nervous system ought to be the chiefest ends to which our inquiries should be directed, he proceeds to say:—

"It must not be forgotten, however, that discipline and a method should be mainly directed to acquiring and applying a knowledge of the physiology of the brain, if the object aimed at be to develop a practical science of mind. 1. The student, to this end, must be ever on the watch to counteract the insidious operation of preconceived notions and prejudices, as the most important of the obstacles to a proper knowledge of the nature of his instrument. 2. He must thoroughly satisfy himself of the inestimable importance of the science itself, as that the final object of which is to enable him to know and exercise dominion over himself and others. With such convictions he will not readily be persuaded that he need give less time and labour to the knowledge of his own nature than he is prepared to devote to any other branch of science; while he is ready to devote years to mathematics, languages, and the like, with a conviction that earnest toil is the only means to success, he should be prepared to view mental science in at least a similar light.

"It is manifest, also, from these considerations, that the student should be prepared by previous study, and a sufficient mental training, for the task before him. Thus, since he has to combine physiology and philosophy to practical ends, a competent knowledge of the two great departments of knowledge should be an object of necessary attainment. But by a competent knowledge of philosophy I do not mean more than may be acquired by the careful study of two or three standard works on psychology and metaphysics, together with a fair knowledge of elementary logic. By a competent knowledge of physiology I mean only a general knowledge of vital structures and functions, as seen in both the animal and vegetable kingdoms. To this end books may help much; but observation and anatomical research by the aid of books, or, better still, a teacher, are absolutely necessary. A certain general knowledge of natural history, including zoology and botany, must be also possessed by the student.

"Now, although the student of mental science must needs employ the methods of scientific research in general, the subject-matter of his science is, in its relation to himself, wholly different from the subject-matter of other sciences. The very thing he has to examine is that by which he examines; the organ whose laws and processes he has to determine is that by which he is enabled to observe and conclude. His brain is both the object and instrument of his researches. Hence all the aims and methods of mental science have a twofold relation to the brain and nervous system: firstly, as an instrument of research; secondly, as the instrument of relation whereby the man is brought as a rational being into connexion with the external world, and the exponent of all those desires and motives which make him what he is. It is this twofold relation which has made the study of mental science so difficult, in so much as the two classes of phenomena are inextricably intermingled; and it is thus that many have been led to the opinion that mental science must necessarily be always too imperfect for any uses as an applied science; that the phenomena it investigates are too obscure and complex to be brought under general principles, or, if brought under such principles, that they are far too profound and too general for application to the multitudinous and infinitely varying changes in the minds of men—or, at least, that common minds can never grasp them for daily use. This doctrine is undeniably true of those *à priori* principles which a one-sided philosophy offers us as the results of meditation and the logical art, to the exclusion of observation and experience of the subject-matter, the brain, but undeniably inapplicable to those practical principles which are reached by the twofold method described. It would be strange, indeed, if it were otherwise, and there were no simple and available principles of a science of human nature, when the whole fabric of human society is held together by the operation of those principles, and when every man, woman, and child in it is of necessity, and instinctively, a practical psychologist. For surely (to mention but one illustration) that estimate of a man's character, and of his probable modes of thought and action, which is habitually deduced from the features, gestures, tones of voice, race, language, accent, expression of countenance, and the like, is virtually nothing more than an empirical psychology, however informal it may be. And when the generalizations which can thus be made respecting the feelings and actions of mankind are reduced to general propositions, they became the empirical laws of a practical science of physiognomy.

"Thus prepared, the student will be able to carry on the twofold process of observation and induction already referred to, without that complexity and difficulty which is otherwise experienced. All his observations can be arranged, accordingly as they are intended to develop a knowledge of the brain as an instrument of research—i. e., of its physiology proper; or as they are intended to apply to a knowledge of human nature—i. e., as facts of mental science. To both these ends the student can either observe and

experiment upon his own states of consciousness in their corporeal relations, or upon those of other living things about him. By the former method he will soon acquire the habit of detecting the necessary relations which corporeal changes, from whatever cause arising, bear to his mental states, and thus gain a large amount of practical self-knowledge; by similar observations on others, he will in like manner gain a large amount of practical knowledge of mankind. Children and the insane are, however, the best subjects for study, but especially children, as the corporeal and mental phenomena they manifest are less complex in them than in adults."

In the following extract Dr. Laycock has drawn a faithful and graphic picture of the rise, maturation, and gradual decay of nations, and has shown that those results are produced by no pre-ordained law, but are due simply to causes that evidently depend upon the altered condition of circumstances, under which they at the several periods exist—one stage, in fact, inducing the other, until the final one at length arrives, and closes the scene. It is active opposition alone, and a well-directed competition, that can keep alive and retain in their full vigour the qualities essential to a nation's success. With the moment of repletion, as he so aptly terms it, comes also the moment of danger. The restless mind must have something to employ itself upon, or it will relapse into pursuits at variance with its further development, or, what is still more melancholy, sink into a condition of apathetic indifference, from which it will be seldom again aroused. Look even to our own times: have they not witnessed the introduction of the Turkish Bath with all the enervating effects that it must ultimately produce? No doubt can be entertained but in theory, and in many particular cases, it must prove eminently useful, but in the end it will be abused, and the pages of history point out, in a manner that admits of no contradiction, the part that it has played in the overthrow of whole communities. Extreme hygienic measures will always argue an extreme degree of civilization, and the latter term as surely conveys the idea of luxury, carried to an unwarrantable extent, wholly at variance with a pure and wholesome condition of society.

The annals of the world have taught us this lesson, and experience has confirmed the fact, that the hours of their greatest prosperity are always attended with the greatest danger to nations, and they have invariably attained the zenith of their highest glory in the moments of their trial and tribulation. Napoleon, who holds the most prominent place in the records of later times, and who was adopted by a vast and powerful people as their type and representative, was invincible as long

as there was a sufficiency of opposition offered to his purposes to call forth all that striking energy of character by which he was so wonderfully distinguished; but as that opposition was gradually, and step by step removed, the hero of the Parisian sections surrendered himself a willing prey to ease and luxury, and ultimately fell a victim to an erroneous conception, sought to be executed on false premises, for it really was no more than a sheer want of reflection, inducing a mistaken calculation of the physical resources at his disposal, that led him to undertake the fatal step of the march to Moscow, and hence his rapid downfall. In his first grand struggle for place and power he never would have overlooked the principal danger of the project he was about to embark in—a conflict with the elements of nature herself; but it should be remembered that he was then in the full vigour of youth, with mind and body marked by a healthy tone, and co-operating with each other, and that he had not as yet acquired the habit of sketching out a gigantic plan of operations under the enervating inspiration of the warm bath.

"Passing from these great questions in sociology, which are to be solved by a knowledge of the laws of action of external agents on the human body, and through it on the mind, we reach a still more complex problem in the growth and maintenance of the social state. The striking analogies observable between the development of individual organisms and species have been applied to the development of nations or large societies of men; and the rise and fall of empires have been suspected to be due to the operation of laws of growth, organisation, and decline, analogous to the laws of development, organisation, and decline manifested in the individual man. So that, although man may have attained to that full knowledge of the influence of external circumstances on his vital and mental states, and therewith to the ability to subdue external nature to his purposes, known as civilisation; yet, without a knowledge of those more hidden laws by which society culminates and declines, civilisation and all its advantages will ever be in danger of retrograding, and even disappearing. History has so often indicated this to be the cycle of events with empires, that the philosophic historian adopts it as a general principle of politics. Republics or monarchies grow up through a youth of energetic action, vigorous inquiry, and brilliant fancy. An adult prime of masculine vigour is characterised by national wealth, comfort, and solid development of the intellect. Then the age of repletion arrives, with suspension of mental and bodily activity, and with gratification of the appetites; a palsy benumbs the imagination, scepticism vexes the intellect, and an admiration of the past stimulates to fixedness and hero-worship. To this finally succeeds old age or national decay, subjugation to more vigorous or

younger nationalities, and revolutions in art, science, religion, if not subversion of them all. Such changes are more directly due to mental influences, less directly to physical or external, and are often modified by primary or inherent qualities, or groups of qualities, of the race,—themselves originated amidst climatic conditions in a far distant time, and transmitted from generation to generation with unwavering steadiness amidst all the variations in external circumstances.

"It is not, however, in the influence of external circumstances on man exclusively of the influence of mind, nor in the influence of mind exclusively of the influence of external circumstances, that a practical science of mind finds its proper sphere. This is rather to be found in the reciprocal influences of the two classes of agents. To reduce the operation of these to general expressions, capable of application deductively to the wants of mankind, is the true end of practical philosophy, as well as of an all-comprehensive mental science. In this sense, indeed, the two terms are synonymous, and in none other; for a philosophy which excludes the whole of physics and of physiology from its inquiries, cannot be practical or scientific in any proper sense of the terms. To this conclusion, in fact, the most practical, and, at the same time, most philosophical thinkers of the day seem to have come.

"Amongst the many illustrations of these views which might be noticed, reference need only be made to one of the modes in which the important influence of agriculture is manifest in human society. The more material things which minister to the life of plants subserve also the life of animals and man. The laws of life are therefore common to both forms of life, as regards these material things. Now, Divine Providence has so arranged the order of events, that whatever develops the growth of such plants as serve for the food of man, or of the animals upon which he feeds, adds to human welfare, while, at the same time, it perfects vegetable life on the earth. So that where man settles, and labours, and multiplies, there the face of nature assumes more beauty; and man himself, contending more effectually with the physical influences to which, in common with all other living things, he is subject, becomes more and more developed in all the characteristics of humanity. In other words, civilisation flourishes. For the continued progress of mankind in this development, or, at least, for the permanence of civilisation, so far as regards food, one thing only is necessary—namely, to follow the order of events laid down by Divine Providence; which is, that the material constituents of animal and vegetable organisms shall pass from one to the other in a cycle of continual change and alternation. These changes take place in the air, earth, and water. The carbon given off as carbonic acid to the air by animals is taken up by plants, and fixed again as carbon; the phosphoric, silicic, sulphuric, and other acids, together with alkaline earths and salts, pass off with the animal excretions, and, when returned to the soil, maintain in vigour the vital powers

of vegetables destined to be the food of man and animals. Now, so long as this cycle of change is kept up, both forms of life flourish; but if the fixed mineral constituents that are constantly taken from the soil by plants be not returned to the soil, it at last becomes so defective in these constituents that vegetable life is no longer vigorous; in other words, the soil is exhausted, and production of food for man and animals ceases. Upon this exhaustion of the soil there necessarily follows, therefore, with the greater difficulty in the supply of food, not only a hindrance to the development of society, but a retrocession; and thus flourishing and civilized communities may slowly but surely decay, from the neglect of this fundamental law of cyclical interchange between animal and vegetable organism.

"Baron von Liebig has very lucidly illustrated this application of one of the fundamental laws of life and organization to political economy, and shown the danger impending over Great Britain in this respect, by examples drawn from the history of ancient Rome and Italy.

"Amongst modern instances of national disaster thus induced, France at the close of the last century, and Ireland in this present, might be mentioned. In France, the full sweep of revolution arose from and was dependent on its defective agriculture; and if the spoliation and subjugation of that country did not close the series of national events, it was because the comity of civilised nations ruled otherwise. Ireland, too, was only preserved from famine by the modern appliances of commerce, developed at the cost of millions by the rest of the United Kingdom. If she had been a really independent nation—i. e., both independent and self-dependent—nothing, it seems probable, could have saved her from utter extinction but subjugation by a foreign power."

In glancing our eye over the several pages of this work, for we pretend to do nothing more, we find in the article on metaphysics the following curious distinction drawn between the two trite and common-place expressions, "memory and recollection," which are so generally regarded, and, in fact, employed as identical in their signification:—

"Consciousness is identified with memory and recollection, or the knowledge of the past, both popularly and by philosophers. Thus, when a person means to say that I do not recollect an event, he will say, It is not in my memory; I am not conscious of it; or, I am not aware that it happened.

"Memory and recollection are two materially related faculties, by which past states of existence are brought into relation with the present and anticipations of the future. Sir William Hamilton distinguishes memory as the retentive or conservative faculty; recollection as the reproductive. 'Memory,' he says, 'strictly so denominated, is the power of retaining knowledge in the mind, but out of consciousness: I say retaining knowledge in the mind, but out of

consciousness; for to bring the *retentum* out of memory into consciousness, is the function of a totally different faculty.' 'If we are capable of knowledge, it is not enough that we possess a faculty of acquiring, and a faculty of retaining it in the mind, but out of consciousness; we must further be endowed with a faculty of recalling it out of unconsciousness into consciousness; in short, a reproductive power. This reproductive faculty is governed by the laws which regulate the succession of our thoughts—the laws, as they are called, of mental association.' 'By *reproduction*, it should be observed that I strictly mean the process of recovering the absent thought from unconsciousness, and not its representation in consciousness,' &c. Here we have the word 'unconsciousness' used in a mode which seems to contradict the doctrine that the mind is never unconscious; for if it can be unconscious as regards all previous states of existence, why (*mutatis mutandis*) cannot it be unconscious as regards the present? Memory is, however, like attention in its nature; it is a faculty so intimately associated with the operation of the vital forces, that no man doubts its entire dependence upon corporeal states. We may doubt as to absolute unconsciousness, but there can be no doubt as to the absolute loss of memory and the power of reminiscence; and it is equally certain that that loss is wholly due to morbid changes in the nervous system—i. e., in the encephalon."

We conceive that a far better illustration of the distinction that actually exists between those two terms may be deduced, not from the examples drawn from the ordinary routine of every-day life, but rather from those caused by keen mental anguish, where a blow has been struck at the very root of our happiness, and that in a part where we were peculiarly sensitive to such an impression. In a case of this description it will require no mental effort to recall the recollection of the anguish that has thrown a chill over the whole tone of our existence, for it will unconsciously arise to mar our happiness, even at those moments when least expected, and, like an unwelcome guest, intrude its ungrateful presence on our privacy at all times, and under all circumstances. It becomes, in fact, completely identified with our very being, poisoning, like some mephitic vapour, the well-springs of our life. No effort, no struggle on our parts can shake off the dominion it has acquired, and both our thoughts and actions are subservient to a control which it exercises with no sparing hand. It is enshrined in our breasts in all the bitterness of its intensity, rendered still more intolerable by the efforts that we may make to veil its presence from the eye of vulgar gaze. This is memory deeply ingrafted, carved into the very inmost recesses of the soul—identified with existence—a part and parcel of ourselves—in-

terwoven, more or less inseparably, with all our associations; unlike recollection, it stands in need of no mental effort to review that dream of other days, which, by the lapse of time, may, perhaps, have faded away into almost utter oblivion, until recalled again to the imagination by some accidental occurrence, and then probably only with the greatest difficulty. In short, memory may be regarded as the imperishable monument that mind has erected for itself as the record of its own reminiscences; while recollection may be considered the picture whose outline and tints fading beneath the hand of time, require a certain combination of several of the mental faculties to resuscitate and restore to what was meant to be their original intention.

It is a common remark, and will be so, we believe, for all time, that philosophers, in their zeal and eagerness to unravel and account for, according to the principles of reason, the mode in which the machinery of life is vivified and regulated, too often neglect altogether the consideration of that Great First Cause which originally animated and bestowed upon the objects of creation those several attributes by which each is so especially distinguished. It should, however, be always borne strictly in mind that they do this, in the great majority of instances, not through any intention of disrespect or irreverence to the acknowledged Creator of all things, but simply in obedience to a rule that they have marked out to themselves of confining themselves closely to the laws of physiological reasoning, as suggested to them by the consideration of the several striking characteristics of the objects that at the moment may engage their attention. The mechanism of the steam-engine, with the nicety of the principles by which its power is generated and controlled, may, it will be admitted, form a subject of criticism and examination, without any reference whatever to its first inventor; but this very silence and apparent slight will never be attributed to a want of proper appreciation of the merit to which he is so fairly entitled, for his highest reward must always consist in the eager curiosity and critical admiration displayed by his fellow-beings in pondering over the stupendous production of his hands. And so it is the case with that higher Power who, as the first and sole exciting cause, has studded the earth that we inhabit with those myriads of objects, infinitely more curious in their design and mechanism than the proudest of man's production, endowed with a vivifying and reproductive principle that none can copy or imitate, standing as far above human comprehension as the heavens are above the earth. As sentient beings, we are conscious of

existence, but, at the same time, we actually know as little of the real essence of which it consists as we do, apart from scriptural grounds, of what becomes of it after death. The doctrine of utter annihilation can never solve the latter part of the problem, nor yet the diffusion of the vital principle into the void of infinite space, to be mingled with the coarser and less refined elements of nature, for both ideas are equally repugnant to our better feelings and judgment, to find many supporters or abettors who can argue, with any reliable appearance of reason, in favour of either termination. Dr. Laycock has, in this instance, we think, truly shown that we must principally rely for the truth of a future state of existence on that intuitive feeling that would seem to exist in almost every nation of mankind, all tending to the same ultimate point, though the paths that lead to it may be essentially different in their character. Moreover, this argument might be still further fortified by that innate and insatiable craving after posthumous fame and notoriety—a feeling so universally implanted in the human mind, and so diametrically opposed to the conception that might be formed of a being finite in his essentialities, as we might be led to presume by yielding to the doctrine of annihilation. No doubt, this latter view has been consistently maintained by many whose intellect has ranged far and far above that of the average gauge of mankind; but still, even on this, too much reliance ought not to be placed, for the fact is notorious to every one, that a certain degree of weakness on one point is by no means incompatible with the possession of the most unlimited amount of mental capacity on every other. In fact, in many instances it is an undoubted mark of genius:—

"But the important question arises, Is this idea of a future state a true teleiotic idea? Is there a future life for man in which a higher differentiation of his powers will take place? In attempting to solve this question, we may start from the fact that there is no race of men, at all advanced beyond the lowest barbarism, which has not an intuition of a life after death. And this has operated as a law of man's nature in all past ages; for whether we examine the ancient Indian, Egyptian, Grecian, or Roman mythologies, we find this institution is the foundation of them all alike. There is an apparent exception amongst civilized nations in the omission of the doctrine from the Mosaic or Hebrew system of religion; for it is a remarkable circumstance, that throughout the five books of Moses positive mention is nowhere made of a future state of reward and punishment. All the promises and threatenings of the code have exclusive reference to future national blessings and disasters on earth. It cannot be conceived possible, however, that Moses or the

people he governed were ignorant of the views of the Egyptians—amongst whom they had lived and been educated—as to a future state; for these were not only of a most definite character, but were interwoven with the most solemn of their religious rites;—namely, the funeral. Besides, that the doctrine was well known to the Jews, is shown by the fact that, at a later period, the opposing sects of the Sadducees and the Pharisees represented the difference of opinion as to a future life subsequently current amongst that people.

"An exception to the universality of an intuition of a future state amongst all mankind is found in the apparent defect of any such doctrine amongst unlettered and barbarous men, like the Australian aborigines. It is difficult to say conclusively that such an idea is wanting amongst them, because the meaning of abstract terms is not of easy interpretation, even in an old language like the Chinese; but, fully granting the fact, it cannot be denied that the intuition of God and of the future state are potentially a part of their mental endowments, and that, therefore, these undeveloped men are capable, at least, of feeling the intuition, and perceiving its truth, so soon as their minds are subjected to the appropriate stimuli from without—i. e. developed into higher powers. Now this potentiality of intuitional belief correlates the potentiality of archetypal development; so that, for the same reason that the ape cannot be developed into a man, for the same reason it cannot comprehend God, or union with him in a future state of existence.

"Nor is it any argument against the probability of a future life to individual man, that we cannot conceive how man can exist in another world, nor what that world may be. Such notions are only possible as the edicts of experience; they are the results of the development of intuitions, by affinitive impressions derived from external phenomena. Consequently, as man's present organization is adapted exclusively to the experience of phenomena of terrestrial things, he cannot pass beyond them in knowledge; he can only imagine, and his imaginations will all be of the earth, and earthly.

"It follows, then, that although man cannot, from the constitution of his nature, comprehend the Infinity, nor understand how he can continue to exist, and know and love God, in a future life; yet he has intuitions which are evidences as conclusive that there is a God, and another life after the grave, as his personal intuitions of his existence at present, of his previous existence in past time, and of his continued existence into the next moment, are conclusive as to his personal identity. And so the highest, and greatest, and least, of the intuitive beliefs of his intellect combine in unity with the first, and simplest, and lowest.

"Finally, it is in the capabilities of man's nature as to the future in which the great difference between him and his fellow-creatures, the lower animals, lies. They do not appear to be capable of a knowledge of God, or of a future beyond the grave. The gorilla —the ape nearest man in development—is, probably, as widely apart from man in this respect as the lowest vertebrate. In other

words, it is not the corporeal form which should assign man his place in creation, but his mind. What this is in its relations to God we have already discussed, and concluded, as a question of zoological Ontology, that 'We are his offspring.'"

We will conclude our notice of this book by one other extract, remarkable for its attempt to account for the difference that is observed to exist in the mental capacity of various individuals, with the causes on which it may be supposed rationally to depend. It is another of those knotty problems in the human organization most difficult of positive solution, for, with every fair extraneous manifestation of superior intellect, we will oftentimes find a lamentable deficiency in this respect, the more marked because falling so far below all our preconceived ideas on this subject. The converse of the proposition will be also found to hold good, stupendous and undoubted talent repeatedly acknowledging as its resting-place an external configuration scarcely commensurate with the picture that the imagination may have drawn for itself of its acknowledged possessor.

The views, as advanced by the author, must unquestionably exercise a very marked influence in explanation of the fact at present under discussion; but they can never be regarded as a standard rule, for the exceptions are too numerous to permit its unqualified adoption, even in the majority of cases. It has repeatedly struck us that this diversity in the scale of intellectual capacity, so observable amongst a given number of individuals, may be attributed, not to the many causes that have hitherto been laid down, but rather to others, so simple in their nature, that they have either been altogether overlooked, or not so strongly insisted on as their importance would appear to deserve. If pathology will pass current for the value of the paper on which its lessons are inscribed—it teaches us one great fact, to which few will be found to demur, that certain lesions of the brain are invariably attended with a series of consequences, that, from their frequency and regularity, admit of no dispute; and can we for a moment deny that, in the earlier periods of infancy, this delicate organ of thought is by far more susceptible of injury from its comparative want of protection, and the softened condition of its structure, than in more advanced years? Who, then, could describe the positive amount of harm that may be inflicted on this organ of thought and consciousness at such a critical moment by the coarse touch of the hireling hand—what parts essential to its future healthy state may be compressed, or actually broken up—destroying a link in that great chain so necessary to the association of ideas!

We have simply to observe the unnatural positions in which the child is thrown hour after hour during the day; and to listen to its screams, and watch its struggles, as nature intuitively battles against this gross and unjustifiable treatment, to feel what must be the inevitable result. While we boast of our rapid advance in the path of civilization, we in this instance, at least, display a lamentable ignorance of the leading principles of common sense, which ought to guide us in a better course. Reform is necessary in this particular; and when this reform has taken place, then, and not till then, will Dr. Laycock's views have some real foundation to rest upon.

"*Differences in the Quality of Brain.*—There is a great difference in individuals as to the quality of their brains, so that men with large brains are by no means necessarily distinguished for their mental powers, as compared with men with smaller brains. Recent researches have enabled us to comprehend the grounds of this difference. We have seen that all mental states are the results of the transmission of vital forces according to a law of design operative in the substratum of mind. Hence the amount of force transmitted will determine the intensity of the vital and correlative mental energies. Now this must necessarily differ in amount, from several causes. First, the condition of the blood and blood-corpuscles, as to their number and their vital forces, varies much in individuals. In strumous lymphatic temperaments, they are fewer in number and less coloured than in the sanguine. Hence, *cæteris paribus*, the latter will have a more active brain than the former, and this is matter of popular observation. The word 'sanguine,' indeed, is applied to denote the mental character of a man who, feeling intuitively the vigour of his forces, sees no difficulties in the way of attaining his projects. Besides, there is not only in the sanguine man a richer blood, but also a larger development of lung, and of heart and bloodvessels, with greater motor power and vital activity, so that a larger amount of force is both acquired and expended in a given time. The size of lungs is certainly of great importance to mental activity. It is not improbable, indeed, that a large brain in a person of a lymphatic temperament, if conjoined with especially small lungs and a large obese body, may itself be a cause of mental hebetude; for the same amount of force, which would give an average mental power and corporeal vigour to a smaller brain and smaller body, is lost, as it were, in the larger.

"Further, there are facts which tend to prove that there are differences in the material substratum of individuals, such that the rate of conduct of the transeunt forces differs. Professor Helmholtz, of Königsberg, who made a series of experimental observations to determine this point, found that in most men the impression which causes a sensation passes to the brain at the rate of 180 feet per second; that under the most favourable circumstances one-tenth

of a second was required to transmit a volition to a motor nerve, but that the rate of speed differs much in individuals, or even in the same individual under different circumstances; and that 1-100th of a second elapses after the movement is willed before the muscle contracts. The whole process requires from one-fourth to one-fifth of a second. Now, in diseased states of the brain (as in the last stages of general paralysis), we find this velocity of transmission of force greatly diminished, so that in some instances the whole process will occupy several minutes. Slow transmission is, indeed, the most common characteristic of old age."

Here we must pause, and it is with deep regret that we close those volumes, not through any dearth, however, of subject matter, for each page, teeming with reflections of a high and lofty character, would afford ample scope for a careful and critical analysis. In conclusion, we trust that it will meet with all that success which its real excellence so richly merits, surpassing, as it does, every work of a similar nature that has for several years past issued from the press on the same subject.

Traité des Applications de L'Électricité a la thérapeutique Médicale et Chirurgicale. Par A. Becquerel. Avec 15 figures intercalées dans le texte. Deuxième Édition, revue et considérablement augmentée. Paris: Germer Baillière, 1860. 8vo, pp. 550.

A Treatise on the Uses of Electricity in the Treatment of Medical and Surgical Disease. By A. Becquerel. With fifteen Plates inserted in the text. Second Edition, revised and considerably increased. Paris: Germer Baillière, 1860. 8vo, pp. 550.

De la Galvanisation par Influence appliquée au traitement des déviations de la colonne Vertébral, des maladies de la Poitrine, des abaissements de l' Utérus, &c. Par le Docteur Seiler. Paris: J.-B. Baillière et Fils. 1860. 8vo, pp. 157.

On Galvanization by Influence applied to the treatment of Curvatures of the Vertebral Column, of Diseases of the Chest, of Prolapsus of the Uterus, &c. By Dr. Seiler. Paris, J. B. Baillière and Son. 1860. 8vo, pp. 557.

Were we to judge by the number of the works amongst our continental neighbours devoted to the study of electrical therapeutics, and by the character of their authors, we should be irresistibly led to the conclusion, that an all-powerful thera-

peutical agent is much neglected and undervalued amongst us British practitioners, and that in this respect at least we are immeasurably behind our more zealous continental physicians. The names of Duchenne, De la Rive, Remak, Ribes, Guérard, and that of the subject of these remarks, M. Becquerel, with many others, present a brilliant *ensemble* of illustrious physicians, who have more or less identified their names with this subject, and, were it only on this account, alone demand at our hands more than a passing notice of the claims advanced by them for this agent in the treatment of disease.

The name of Becquerel, the distinguished physician to the Hôpital de la Pitié, is sufficient guarantee to us that all that he advances as the result of his own experience is based on fact; and though on some points we may be permitted to doubt the truth of his theories,—especially when those are opposed to the result of experiments conducted by men of equally distinguished attainments in this special department of therapeutics—yet we shall do so with a respect due to the zeal, ability, and acquirements of one who has undoubted claims on our admiration and gratitude, and from even whose theories we dissent with considerable diffidence and great reluctance.

Our first object, however, shall be to point out to our readers the method adopted by M. Becquerel in the arrangement of his Treatise, which can be briefly summed up as follows. The work opens with a preliminary history of the literature of his subject, in which full justice is done to the labours of his own countrymen, but from the perusal of which the reader, otherwise uninformed, would rise with the conviction that elsewhere nothing has been done for the subject. How true this statement is, may be inferred when, amongst a host of other omissions, we inform our readers, that in M. Becquerel's bibliographical record, the name of Augustus de la Rive, the distinguished Professor at Geneva, whose monogram is without doubt the most important one ever published in any language on the entire subject of electricity, is not even once mentioned; one name however, is mentioned, and with marked approval, which we are the more pleased at, as endorsing the favourable opinion we expressed of the work in question, in our Number for November, 1859. In speaking of it, M. Becquerel thus expresses himself:—"The last work which has appeared in London upon electricity applied to therapeutics, is that of Dr. Althaus. It contains interesting facts, and is perfectly up to the present position of the science. I cannot, then, too strongly recommend its perusal. I shall put it under contribution in the third part of *the application of Electricity to Therapeutics.*"

The subsequent portion of his work is divided into three parts, in the first of which the various static and dynamic apparatus are described; and subsequently, in an Appendix, we have a description, with a plate, of a new electro-magnetic apparatus by M. Gaiffe, of the merits of which M. Becquerel expresses himself in the highest terms:—"The simplicity of its construction, its cheapness, and the facility with which it works, determined me at once to experimentalize with it in my wards. . . . We have now used it for two months, and can only speak of it in terms of praise. It can be graduated with facility, and yields the weakest up to the strongest currents, intended to produce hyposthenization. It produces the two currents of which those physicians, who still believe in the difference of their action, can avail themselves; in one word, it is a good apparatus."

The second part is devoted to the consideration of the method of applying electricity to the organism, and of the nature of its action on the tissues; and it is in this portion of his work, in his physiological theories, that in our opinion M. Becquerel's work is weakest; whilst the third division is occupied with the more strictly therapeutical portion of his subject.

In critically examining M. Becquerel's Treatise, we shall first dispose of that which is always an ungrateful task to every proper-minded reviewer, when analyzing any able production; we mean, the taking of exceptions to the views entertained by the author. Now M. Becquerel has assumed, as a demonstrative fact, that the two currents respectively named by M. Duchenne and other authorities on these subjects, as currents of the first order and currents of the second order, are identical in their physiological action, although the very reverse of this is asserted by M. Duchenne and other equally eminent authorities. The experiments of one gentleman, M. van Holsbéek, so far as they go, appear to be tolerably conclusive on this point. We quote from his work, "Compendium d'Electricité médicale," where, in support of his view that they differ in their physical, chemical, and physiological actions, he states that "currents of the first order produce deflections of the needle of the galvanometer; that when two copper wires in connexion with the two parts of the apparatus are plunged into a metallic solution, the negative part is quickly coated with the metal, whilst the positive pole is deprived of it; in other words, the current of the first order has well-marked poles. The same phenomenon is witnessed in the decomposition of water: the oxygen is disengaged at the positive, the hydrogen at the negative pole; that *when a frog or a mouse is submitted to the action of a current of the*

first order, it quickly falls down deprived of sensation and of motion, and if the application be continued, it finally sinks under it. Whilst currents of the second order do not produce deflections of the needle of the galvanometer, the two copper wires plunged into the metallic solutions are both coated with the metal, but slowly, that is to say, this current has not distinct poles, *and a frog or a mouse reduced to the state of apparent death by the current of the first order, is rapidly revived under the influence of the current of the second order;* and, as the natural deduction from these experiments on animals, M. Van Holsbéek concludes that "the current of the first order is an hyposthenic of nervous power, whilst that of the second order is an absolute stimulant."

The difference in the physiological action of these two currents is very striking, and in our minds not to be explained by M. Becquerel's theory, who attributes them to the different degrees of tension of the two currents. In a therapeutical point of view a correct determination is all important; and even those who support M. Becquerel's views acknowledge the importance of the same apparatus being capable of furnishing us with *both* currents, as the case which is likely to be benefited by the current of low tension is unsuited for treatment by that of high tension, and *vice versâ;* an acknowledgment on their part approaching, as near as can be, a confession of the truth of the views entertained by Duchenne and Van Holsbéek, and others who support their views of the physiological actions of the two currents.

One of the most interesting subjects connected with the therapeutical history of electricity, in all its forms, is the difference in the importance attached to its use on the Continent and in these countries. Abroad we find physicians of the greatest eminence making it one of their most frequently employed and most trusted means of treating disease; here, but little confidence is placed in it. Abroad, every hospital has its varied apparatus for administering it, apparatus every day put in use, and the value of which is tested in every form of disease; whilst a mass of experience and of facts are being accumulated, sufficient to put the members of our hospital staffs to the blush for their supineness; and yet this is not from any deficiency of information on the subject. So long ago as 1846, Dr. Neligan contributed a very interesting paper on this subject in the Edinburgh Monthly Journal of Medical Science for April. In this paper he very justly attributed the neglect into which this method of treating disease had fallen, to "the large size and difficulty of application of the various apparatus employed for their administration." Since then this source of complaint has been fully

removed, and yet we find still existing the same apathy and neglect! In this paper Dr. Neligan brought forward some most encouraging cases of its successful employment, especially one of complete paralysis of the muscles of the forearm, following a fourth attack of painter's colic, in which case he was enabled to make a contrast between this plan of treatment, and the older routine one by splints, shampooing, blisters, strychnia, &c., highly in favour of the former. Since then we have had brochure after brochure appearing, principally, however, on the Continent, and yet does not this plan of treatment increase in favour, or indeed get the fair trial it merits amongst British physicians. Abroad, however, such is not the case: therapeutical electricity is pursued with energy, and has received so recognised a status that we actually find in the "Journal Militaire," bearing date September 13, 1858, "Instructions relative to the medical employment of electricity in the Military Hospitals in the interior of Algeria." These Instructions are prefaced by a "general order," establishing an electro-therapeutical plan of treatment in different military hospitals there pointed out, and the patients submitted to this plan of treatment are to form a distinct class, and to be under the control of a special physician. In these "Instructions," a minute description is given of the different electrical apparatus that may be employed, the method of manipulating and of preserving them is fully described, as also the rules to be followed in their employment, and then follows a list of those diseases in which, in the present state of the science, we may employ this plan of medication.

After making some very proper remarks on the responsibility that attaches to the employment of electricity, and cautioning those gentlemen from making biassed reports, in which "successful cases are exaggerated, negative facts are attenuated, and a profound silence observed with respect to accidents," the Report proceeds to give a list of the cases suited for its employment, which are thus classified :—

Lesions of mobility.
Lesions of sensation.
Alterations of nutrition.

In addition to these lesions, electricity has also been employed as a surgical appliance. Under each of these heads are arranged a series of instructions, giving a brief compendium of the present state of our knowledge on those subjects, principally based on the theoretical views of M. Duchenne. We shall pass over the three first of these divisions, and come at once to

the remarks made under the head of the "surgical uses of electricity."

"Aneurisms are the form of surgical disease in the treatment of which electricity has been most frequently applied, and with the greatest amount of success. The number of cases cured by these means was, in 1845, eleven out of eighteen cases; since then, in nine operations, we count eight successful, and one unsuccessful, but no fatal cases. Electricity has been pre-eminently successful in cases of aneurism consequent on unskilful venesection at the bend of the arm. There is no reason why we should not have recourse to it, not only in this case, but in every other when the tumour cannot be commanded by pressure or the ligature. The plan of proceeding which gives us the best chance of success is to introduce, as high as possible, a needle into the centre of the tumour, and to apply on the lower portion of the tumour a metallic plate placed on a piece of flannel of the same shape and size, moistened with a saline and slightly acidulated solution; the needle is to be in connexion with the positive, the metallic plate with the negative pole of the battery; this is essential. For a change of poles would result in accordance with observations that appear exact, in the prevention of the formation of the coagulum in the aneurismal sac."

Now, with all due respect for the authors of this document, we must state it as our opinion that traumatic aneurisms at the bend of the arm are not precisely those best suited for this plan of treatment; in no other situation do we find aneurisms more advantageously placed for a variety of treatment than here; it must not be for one moment imagined that the galvanic puncture is quite the harmless proceeding here represented; many, and some of them most serious, objections can be alleged against it. It is frequently most painful, occasionally gives rise to ulceration about the point of insertion of the needle, which may extend throughout its entire trajet; inflammation may follow its use, but, above all, the coagulum formed is not of a satisfactory character. Broca, in his admirable Treatise on Aneurism, has divided coagula into two classes—active and passive—the active are those composed of fibrine, hard, firm, and of rapid organization; the passive are of a softer consistency, break up with greater facility than the active; are composed, not only of fibrine, but also of blood globules, and are precisely those that are formed under the influence of the galvanic current.

Amongst the many interesting therapeutical uses of electricity enumerated by M. Becquerel, is its value in restoring the lacteal secretion in the female breast. The merit of this suggestion he attributes to M. Aubert, whose remarks on the

subject he extracts from the "Gazette des Hôpitaux" with the following comments: "After reading these observations, my first impression was altogether unfavourable to a similar application. I did not look upon it as of serious importance, and was inclined to consider the re-establishment in this case of the lacteal secretion as but a mere coincidence. Such were my impressions, when, in the month of October in this year, an opportunity presented itself of verifying the truth of this assertion, and of making a similar experiment."

He then records the case of a young lady suckling her infant, who lost her milk under the effect of mental impressions, and, as a consequence, the baby was near perishing from want of nutriment, which the mother resolutely refused to be supplied at the hands of a stranger. Under these circumstances M. Aubert's case flashed across his mind, and he determined to try electricity. On the evening of the first day on which it was applied, the milk reappeared, and after three applications an abundant secretion was re-established, and he concludes the case with this remark: "This result should induce practitioners to make a similar use of it;" a remark, as our readers will observe, in striking contrast with that with which he introduces the subject. Is M. Becquerel correct, however, in attributing the merit to M. Ludwig of first having demonstrated the power of electricity in increasing the amount of one liquid secretion, and of pointing out its sialogogue effects? M. Mauduyt, in his work on Electricity, published in 1778, drew especial attention to its diaphoretic and sialogogue powers, and since his time many authors have referred to its power over the secretions.

M. Becquerel's observations on the value of electrization in the treatment of saturnine poisoning has our fullest concurrence. In 1858, M. Briquet announced the application of electrization to the treatment of lead colic, and other forms of saturnine intoxication; he asserted that the pain disappeared under its influence, and that the lead was, by its agency, eliminated from the system. This application of electricity is not to be confounded with its employment as a stimulant to the muscular and nervous systems in local paralysis resulting from the ingestion of lead into the system, when electrization is employed as an adjuvant after the lead has been removed by other means, or concomitant with such treatment. M. Briquet proposes it as the sole *remedium*, and records many cases in support of his views. The self-complacency with which M. Briquet makes the following remark is worthy of the plan of treatment which he advocates: "The *only* means additional to faradisation em-

ployed were the sulphuric acid lemonade, a draught containing from 2 to 3 grammes (from about 30 to 45 grains) of sulphate of alum, a pill containing 5 centigrammes (about $\frac{3}{4}$ of a grain) of watery extract of opium, and a sulphur bath every second day." We can well afford to doubt the efficacy of faradisation here: surely this is our most approved plan of treating the disease in question, and it is rather putting our credulity too severely to task to ask of us to attribute the symptoms of amelioration in these cases principally to the faradisation, when the experience of thousands of similar cases treated alone by what M. Briquet is pleased to term his "adjuvants to faradisation" convinces us that they alone are competent to cure, without any assistance whatsoever from the electricity. That the pain of lead colic may be abated, nay, even absolutely removed in some cases, we are free to admit; but even to this statement we can find numerous exceptions; but that molecules of lead deposited in the several tissues of the body can be thence eliminated, is more than we can acknowledge, and until electrization is capable of effecting this, or is proved to have this power, we can only look on it as of very minor importance, indeed, in the treatment of saturnine intoxication. It may temporarily relieve the pain, but the *fons et origo mali*, the lead, still exists in the system, prepared to reproduce the former symptoms, and, until it be eliminated, the treatment at best can be considered as but palliative, by no means as a true remedy or cure. M. Becquerel gives us a striking illustration of the truth of these views in the following case, condensed here from his present treatise: "A house-painter, aged 28 years, came into l'Hôpital de la Pitié on the 6th January, 1860, suffering from well-marked symptoms of lead colic; two drops of croton oil were administered to him, which produced three stools, and had the effect of diminishing the pain, which was still, however, well marked, and sufficient to cause him occasionally to cry out; under these circumstances the idea entered my head of once more trying whether electricity could give relief to his sufferings; with this view we made use of a Ruhmkorff's machine, and for five minutes subjected him to the influence of a current sufficiently strong to make him grasp and twist the sheets; on being asked now as to the pain, he replied that there was none,—that it had entirely disappeared. I was pleased at the result, but at the same time warned the pupils who surrounded me, that, though it was true that in this particular case the electric current had the power of relieving the pain, still, that it had not the power of curing the disease of saturnine intoxication, because the cause,

that is the molecules of lead, still remaining, the effects would also remain.

" Time was not slow in verifying my predictions, for, not having been subjected to any treatment on the following day, on the next day but one he presented all the symptoms of intense fever, and on the day following that, he was in a most pitiable condition: violent headach, numbness of the upper and lower extremities, clenched jaws, fingers firmly extended, thumbs flexed on the palms of the hand; high fever, and a sensation of constriction both of the abdomen and of the chest; praying for the speediest relief—such was the picture presented to us by our patient." M. Becquerel then describes the treatment of the case, which, however, has for us no further interest. We have quoted it here to support the views that we entertain on the subject, and in our minds it is conclusive.

We must here bid adieu to M. Becquerel's most instructive treatise: written by one of the first physicians in France, it bears on every page the impress of the thoughtful, accomplished medical man, and of the sound natural philosopher. If our present comments but induce our brethren in this country to take up this most important department of therapeutics, they will not have been written in vain, and any one who does do so cannot adopt a better guide than M. Becquerel. We are firmly of opinion that in these countries this plan of treatment is as much under-valued, as on the Continent it is, perhaps, over-estimated; to arrive at its true value will require careful experiments, conducted by parties who are not sceptics on the one hand, or enthusiasts on the other; by practitioners impressed with the value of medicines, but prepared to admit the claims of electrization, if sufficiently demonstrated; in a word, in this, as in every other department of science, truth will attend the investigations of the patient, accurate, and unbiassed observer.

The second work on our list is, if all stated in it be correct, a most remarkable one, and will mark the commencement of a new era in our profession. But we fear much that, as the salutary and much demanded reduction in the doses of medicines formerly administered—the loudly-called for reformation of the drugging and drenching system—gave birth to homœopathy, as the well-directed use of the bath gave rise to hydropathy, as the Edinburgh theory of a deficiency in the saline constituents of the blood in cholera resulted in the brandy-and-salt charlatanry—so may the undoubted remedial effects of electrization have given origin to the system here announced by M. Seiler. That French physicians have but little faith in

the more potent of the remedies furnished us by the Materia Medica, is a fact but too patent to those who are familiar with their cliniques, or who are in the habit of perusing their periodical literature; of *tisanes*, of *siropes, et hoc genus omne*, we read abundantly, in cases where the more sturdy British practitioner would have recourse to far more energetic measures; and in this manner may we account for the tenacity with which they cling to any plan of treatment that promises to fill up the void left by such a line of practice. Whilst entertaining such opinions, however, we should be sorry to undervalue, through mere ignorance, a plan of treatment that may have some facts to support it; and we therefore consider it the more just course for us to adopt, to briefly sketch out the principle advocated by M. Seiler, to indicate the cases in which, as he states, he has employed it with advantage, and to leave the matter then for the mature consideration of our readers.

During the latter months of the year 1853, M. Seiler engaged himself in making a series of experiments, with the object of producing local anæsthesia; and, amongst other means, tried that of the electro-galvanic induction current; making passes, in imitation of the animal magnetizers or mesmerists, with the instrument over the patient's person, but without touching it or producing any discharge of the electric spark. For some time these experiments were unattended with any result; but at last one individual (*a female*) declared, after a long sitting, during which a great number of passes were made over her arm, that she felt it numb; that her muscles were contracted, and that she felt some difficulty in stirring her fingers; but that she experienced no anæsthetic effect whatsoever; and next day reported that the contraction of the muscles of the arm, which she had experienced the previous evening, had persisted during several hours. The experiment was repeated, and always with the same result; but he experienced considerable difficulty in meeting with other patients of a similarly sensitive organization. By degrees, however, he was more successful, meeting with a sufficient number to confirm the reality of his discovery, to realize the full effects of which, however, he was constrained to have constructed for his own use an induction machine, in which he introduced some modifications, the result of which is, that he is enabled to produce these effects on every person, *with but few exceptions* ("*Sur tout le monde, ou à peu près*").

These last words, which we have put in italics, are what fill our minds with misgivings on the subject. Well aware are we of the result attending the manipulations of mesmerists

in persons of highly sensitive organization, how impressionable they are, and how extremely likely we are, in their case, to confound cause with effect. This subject, however, is too extensive for us to enter on here; we must pass on to the class of cases which have received benefit from the plan of treatment here recommended by M. Seiler, and for a description of whose apparatus we must refer the reader to the work in question.

The class of cases in which the author has, as yet, employed it, are pretty nearly those indicated on his title-page. In curvatures of the spine his object is to produce the numbness and stiffness of the muscles of the affected side, described in the case which first attracted his attention; in this manner he has produced, so far as the cases recorded can evidence, most admirable results. In these class of cases we can catch a glimpse of the *methodus medendi;* not so, however, in its application to diseases of the lungs; here, as in phthisis, its employment is suggested with the view of enlarging the capacity of the thorax, and its efficacy is attempted to be supported in such cases by measurements; how fallacious these but too often are, is well known to every practising physician; but admitting, for argument sake, the fact, how are the rigidity and numbness of the lumbar muscles, so essential to the cure of curvature of the spine, according to our author's views, to be rendered compatible with the existence of a similar condition in the muscles of the thorax, inducing an increased capacity of the latter cavity? Marvellous as are the cases detailed in this portion of M. Seiler's treatise, they pale and sink into comparative insignificance, when contrasted with the case of prolapsus uteri of Madame F., of which we shall submit a condensed description for our readers' benefit and instruction.

"On the 17th of July, 1855, M. Seiler was called on to visit Madame F., thirty-six years of age, of small size, thin and spare in habit—a charwoman. She had fallen backwards a few days before, and was now suffering from complete prolapsus uteri. She was in bed, suffering cruelly from pain in the belly, and from inflammation of the mucous coat of the uterus, which she was unable to replace. M. Seiler exerted himself to replace it, but ineffectually; violent colicky pains, and the straining attendant thereon, invariably reproduced the displacement, and he had to content himself with one opiate cataplasm, and a twelfth of a grain of acetate of morphia, to be taken each hour. Next day, the colicky pains having much diminished, he was able to return the uterus partially, but it remained at the entrance of the vagina, ready to descend again on the least exertion; the treatment was continued, and at the end of three

days Madame F. was able to get up, but was no sooner erect than the uterus descended again; he now made use of a bandage, and the patient came to his house to try the effect of his form of galvanization, on the very first application of which the patient expressed herself as feeling a constriction of the walls of the vagina, at the same time a sensation as if the womb were slightly ascending. After a ten minutes' sitting she was made to walk about the room, and on examination it was ascertained that the uterus had not redescended; but, on the contrary, was situated higher up than before the commencement of the operation. On the day following the second operation, Madame F. came with joy to inform him that the womb had never since prolapsed; that she was well able to walk, and, in a word, believed herself to be on the high road to a perfect cure—anticipations fully realized, after a continuance of the treatment for three weeks, when she was able to resume her usual avocations—the uterus was in its proper site; and from that time forth this poor woman has not ceased toiling from morning till night, frequently carrying on her head loads far beyond her strength; and, nevertheless, the womb has never since been displaced!"

Many such cases are here recorded; however, we must leave the further decision in the hands of our obstetrical brethren. The monograph is worthy of careful perusal, of serious consideration, of further observation, before any one should feel himself competent to express decided approbation or disapprobation.

Chapters on Diseases of the Ovaries, translated, by permission, from Kiwisch's Clinical Lectures on the special Pathology and Treatment of the Diseases of Women: with Notes and an Appendix on the Operation of Ovariotomy. By JOHN CLAY, M. R. C. S. Eng., &c. &c. London: Churchill. 1860. 8vo, pp. 430.

IF names can give any assurance for the character and merits of a book, the one now before us on Ovarian Diseases should be of a high class. The writings of the late Professor Kiwisch von Rotterau have justly obtained for him an exalted place among obstetric authorities. Professor Scanzoni, of Wurtzburg (of whose edition of Kiwisch's work on the Diseases of Women the present is a translation), enjoys at the present time the greatest reputation as an accoucheur in Germany; and the name of Clay is likely to be long associated with the subject of

ovarian tumours and ovariotomy—although the translator of this treatise is not, we believe, the gentleman whose heroic operations have gained this association for the name.

Our knowledge of the pathology of ovarian diseases is of very modern date. In fact, the particular function discharged by these organs in the female economy, and their exact relation to menstruation, are matters of comparatively recent discovery. But, till these were established and clearly understood, it was not to be expected that we could have any acquaintance with the semeiology or pathology of the diseases to which these organs are subject. The first few pages of the work now before us form a sort of introductory chapter, being taken up with the consideration of the anatomy and physiology of the ovaries. Without being minute, it is concise and good. The relations of the ovaries to the adjacent viscera, especially to the intestines, is well described, and as this is a point of no small importance in the diagnosis of abdominal tumours, we shall quote the author's observations:

"When we take into consideration the anatomical relations of the ovaries to the other adjacent structures, it is evident that the small intestine lies directly upon them. The movability enjoyed by this portion of the bowel may readily cause displacement of the ovaries; while, on the other hand, the small intestine may be pushed upwards by ovarian enlargements; but, as the size of the tumour increases, it will be pressed backwards in consequence of being tied down by the mesentery; under such circumstances, large ovarian tumours always come into direct contact with the anterior abdominal wall, and give rise to the percussion sounds, which will be afterwards described. We have also to observe, that in consequence of the peristaltic contractions of the bowel, pathological adhesions of the ovaries to it are not easily produced, and are very rare compared with the frequent adhesions of the ovarian organs to the other adjacent structures. We must not overlook the fact that the small intestine never lies below an ovarian tumour, so that the ovary always occupies the lowermost place in the pelvis—a circumstance not without importance in operations from the floor of the vagina. The rectum, which, even in the normal position, is situated very near the ovaries, especially on the left side, comes in all cases of considerable ovarian enlargement, into still closer contact with them, and the freer the tumour is, the more posteriorly it is situated—as we have already remarked."

The modern "ovular theory" of menstruation, first projected by Dr. Power, but conclusively established by the discoveries of Negrier, Robert Lee, Gendrin, Bischoff, and others, is fully accepted by our author. With regard to the interest-

ing question of whether menstruation is the only mode by which the Graafian follicles can be evacuated, or whether this may be accomplished in any other way, his statements seem rather at variance. For, first, he admits that a pathological hyperæmic condition of the ovaries, if it reaches the necessary extent, may result in the dehiscence of Graafian follicles; but, he adds that, under all circumstances, a persistent accumulation of blood in the ovaries is the only means by which such results can be produced; and he further adds this remark: "In general this must occur very seldom, and we would particularly mention in this place that they can least of all be occasioned by the transient sexual excitement caused during coition." Few physiologists, we imagine, will concur in this opinion. That a vesicle is not ruptured at each and every act of sexual congress, cannot be denied; but, when fruitful intercourse takes place, the case is widely different, and we must then suppose that an ovule is immediately or very soon afterwards discharged from the ovary. On a point of such obscurity, however, it is the wisest course abstaining from any dogmatic assertion, and though we differ from the author on this matter of opinion, still we would not wish to put forward our views with the same confidence he does his.

The sections upon the Pathology and Diagnosis of Ovarian Diseases in general are about the best in the book, though not, perhaps, as abundant in practical instruction as one might have expected from authors of such extensive experience in the diseases of these organs. The opinion that one or other ovary is principally disposed to disease is wholly rejected. Respecting the occurrence of tuberculosis in the ovary, he states that it does not appear to him to have been demonstrated, with certainty. The only approach to it he has met with was the appearance of some granules of a rather questionable tubercular character in the ovary of a patient who had intense peritoneal tuberculosis in the pelvic cavity. That the ovaries should be exempt from tubercular deposition, is certainly a very remarkable fact—if fact it be—and well deserving the attention of observers. Kiwisch is here at issue with other authorities, and the point must, therefore, be still looked upon as unsettled. As regards the concurrence or combination of ovarian diseases, in the same ovary, experience shows that different diseases may occur simultaneously in the ovary; and that it is often possible to study, in a single diseased ovary, the greater part of the forms of disease which take place in this organ—such at least is the opinion of our author.

In classifying the diseases to which the ovaries are obnox-

ious, Kiwisch takes for his foundation their anatomical structure; as, by proceeding in this way, he thinks the principal organic changes met with in them can be most successfully investigated. He does not rigidly adhere to this system of classification, however; for, if so, there would have been no place for his second class of diseases, namely, dislocation of the ovaries. He admits that it does not include affections consisting merely in abnormal sensibility (neuralgia), or functional disturbance; for, though such certainly do occur, and he believes he has observed something answering to the oophoralgia of some authors, yet, from the deep situation of the organs, these affections, he says, are almost unknown to us. We confess to being very dissatisfied with this reasoning; nor do we think that the inaccessible position of an organ, of necessity renders the diagnosis of its diseases impossible or difficult. The brain, the spinal marrow, the kidneys, are all beyond the reach of manual examination, and, therefore, in its important sense, "deeply situated;" and yet their functional diseases are by no means unknown to us. That there is such a complaint as ovarian neuralgia, or ovarian irritation, cannot be doubted; Dr. Churchill has given a full description of it in a former Number of this Journal[a].

In the carrying out of his classification Kiwisch endeavours, and very properly, to satisfy practical requirements as far as possible; hence the more prominent external signs are made available to their full extent. These considerations induce him to separate chronic enlargements of the ovaries into two great groups, viz., fluctuating and solid tumours. The following is his arrangement of ovarian diseases:—1. Imperfect development; 2. Dislocations; 3. Inflammations; 4. Simple, and, 5. Compound follicular degenerations and formation of secondary cysts; 6. Solid tumours of the ovaries.

The section on "Dislocations of the Ovaries" contains little more than a description of the different herniary protrusions, which experience has shown may have one or both ovaries identified with them. To illustrate the subject, many of the recorded examples of this anomaly are quoted. Dr. Rigby, in his work on Female Diseases[b], has very clearly pointed out a train of symptoms, attended with great suffering, arising from displacement and consequent compression of the ovary. Kiwisch gives us no information upon this point. He died, however, before the publication of Dr. Rigby's work. But assuredly

[a] August, 1851, No. XXIII.
[b] Reviewed in No. XLV. of this Journal.

his Wurtzburg editor, or English translator, might have given us the benefit of a "note" on the subject.

Acute inflammation of the ovary is treated of under two heads, according as it occurs in the puerperal and non-puerperal states. Under each of these heads we have a formal consideration of the subject in regard to its "pathological anatomy," "etiology," "symptoms and course," "diagnosis," "prognosis," and "treatment." Abscesses of the ovaries are, without any sufficient reason, we think, treated of separately and distinctly, and with the same tedious formality, and the unavoidable repetitions which this dry and perfunctory mode of handling a practical subject requires. We cannot say that the text throws much light on the diagnosis or treatment of these obscure affections, and we entirely concur in the remark of the translator, "that the pathology and symptomatology of the neuralgic, congestive, and primary inflammatory diseases of the ovary are yet imperfectly understood." With reference to the therapeutics of simple ovarian dropsy, or "simple follicular degeneration," as the author designates it, his remarks are far from encouraging:—

"We must, unfortunately, confess," he writes, "that hitherto not much progress has been made as to the radical internal treatment, or even in the essential amelioration of the more developed forms of the disease. Notwithstanding this great uncertainty of our therapeutics, we must still, out of humanity, make frequent careful attempts at cure in our patients, and repeat them so long as it is not permitted us to adopt another, namely, an operative treatment; because, on the one hand, it appears that in some cases essential results have been obtained, and the progress of the disease checked, by the internal treatment, while the moral power of the patient is often degraded in a very sad manner by the loss of hope on the part of the physician."

The different modes of surgical treatment, palliative or curative, that have been recommended for the cure of simple ovarian cysts, are well described. The author's *method of radical treatment* would seem to be about the most successful, not only in his own practice, but in that of others, especially of Scanzoni. Of it the translator remarks—"Notwithstanding the fears of Dr. West, the success of this method of operating, according to his results and those of Kiwisch and Scanzoni, is very great; and, as will be found hereafter, by no other treatment has (*sic*) similar results been obtained." We shall transcribe the author's own description of his method of procedure:—

"Our method is generally applicable to moderately large, simple cysts, which do not exceed the size of a large pregnant uterus, and

can be reached from the vagina. Smaller cysts are obviously still more suitable to it as soon as they can be recognised. In order to answer the purpose intended by us, the cyst is opened through the wall of the vagina to such an extent that a finger can be easily introduced through the wound. After evacuation has been effected, a strong, long uterine tube, with a bulbous extremity, is introduced into the cyst and fastened in front of the genital organs, and left for several weeks, until diminution of the cavity of the cyst takes place, which process is accelerated by the daily injection of warm water."

In addition to the above, he gives minute details of each step of the operation; but such of our readers as may desire to be made acquainted with them, we must refer to the work itself. Although much pressed for space, we cannot conclude this notice without some allusion to the observations on extirpation of ovarian tumours, as the opinion of so high an authority as Kiwisch—who himself performed ovariotomy five times—is entitled to much respect. He tells us that in the first edition of his Lectures he gave a review of 122 cases, "which, in consequence of their great interest, are increased by a few, and inserted here, statistically arranged." No such statistical table is to be found, and the omission is explained by a note of the translator's, to this effect—"The tables referred to in the text were found incorrect, scanty in detail, and incomplete; they have been therefore omitted, and new ones prepared, which are placed in the appendix.—J. C." We confess that this seems to us taking rather a liberty with an author. We should have much preferred Kiwisch's own table being inserted, and for the translator to have indicated, in any way he thought best, where it was erroneous. To leave out, and summarily condemn, the collection of data upon which, in all probability, his opinion respecting this much debated question of ovariotomy was based, is scarcely doing justice to a deceased author. The remarks upon the value of the operation are given with much caution and reserve. Kiwisch performed it himself five times, but without success. This, one would think, might have prejudiced him against it, yet he very fairly states the advantages and the disadvantages of extirpation, and believes "that it is to be so much the less wholly repudiated, because it is expected that with the progress of diagnosis the results of this operation will be still more favourable." In his enumeration of the difficulties connected with the operation, he mentions ambiguity of the diagnosis as one of them, adding that this difficulty is combated by the fact that in cases where there is a doubt of the diagnosis one does

not operate: "but this prudence," he continues, "is not peculiar to every lover of operations, as recent English literature shows (*cases*) in which, uterine fibroids sometimes being found, instead of ovarian tumours, the former were extirpated, and brought the patient to a speedy death." This caustic allusion to the heroic operations of some modern English surgeons contains a well-merited rebuke.

Mr. Clay's tables of cases of ovariotomy occupy nearly half the volume. We cannot enter into anything like a minute analysis of them, but the gross results, obtained by careful computation, will be interesting. The total number of cases given, in which an operation was undertaken for the removal of a real or supposed ovarian tumour, is 533; of this number, 234 appear to have died from the effects of the operation; and 299 to have recovered; but of these 299, only 212 were really fit subjects for the operation, and derived from it a *bonâ fide* cure of their complaint. After the operation of complete extirpation of the ovarian tumour, 183 patients, or very nearly half the entire number, died; and 212, as we have just remarked, recovered. So that it just comes to this: that, of 533 patients operated on for the extirpation of real or supposed ovarian tumours, only 212 were cured of this complaint, 234 perished through the attempt, and 87 escaped with their lives, and no more. These results forcibly point out the importance of directing attention to the improvement and perfecting of our means of diagnosing the *really suitable* cases for operation.

These tables are arranged under different heads, and all give the "source of information." The translator in the preface tells us he applied to many members of the profession for the results of their experience, &c., in reference to ovariotomy, and that in nearly every instance his "communications were responded to with the greatest courtesy."

"To particularize," he says, "would be an invidious distinction," but, "in justice to those who so kindly aided him," he deems it "a less pleasing duty to perform," to mention the individuals who were "not courteous enough to reply to his communications for particulars." This *black* list contains three names. Now, had the translator published the names of those gentlemen only who were so kind as to answer his inquiries, and had suppressed the others, he would, according to our notions, have done the right thing. We do not at all see that a medical man is called on to supply information to all who may choose to send him queries. It has of late years become a common practice for embryo authors to send round printed lists of queries to medical men, for the purpose of eliciting

facts or information from them, and so to obtain materials for a book. Where the parties are strangers to each other, this is an unwarrantable proceeding, and we do not see that any medical man is bound to take notice of such applications. Most strongly, therefore, do we protest against holding up to public censure (as the translator does) the names of those who do not feel themselves called upon to answer all such inquiries. Indeed, we cannot see how any censure can attach to them for so doing.

As ovarian diseases engross so much attention at the present day, we doubt not the work before us will prove a most acceptable and valuable addition to our literature upon this subject. By ovariotomists and others, Mr. Clay's tables will, no doubt, be highly appreciated.

The Medical Knowledge of Shakespeare. By John Charles Bucknill, M. D. Lond., &c. &c. London: Longman & Co. 1860. 8vo, pp. 292.

Since the earliest period after the death of our greatest English dramatist that attention was attracted to the study of his plays, the wonder of all has been at the universality of knowledge he possessed. The more the works of Shakespeare are studied, the more astonishing becomes, not alone the universality, but the accuracy of his knowledge. This has induced many to believe that he must have been indoctrinated in his youth in not only one, but in all of the learned professions. To carry out this view, the present Lord Chancellor of England recently published an essay to prove that, from the legal knowledge exhibited by Shakespeare in his dramatic works, he must have been a lawyer. And now Dr. Bucknill, in the learned volume before us, endeavours to prove he must have been a member of our profession. The book scarcely falls, legitimately, within the scope of our literary criticism, but we think it right that the able author should have the benefit of our medical opinion as to how well he has executed his task. Already well and favourably known as an author in the special department of medical science to which he has devoted himself, Dr. Bucknill has nevertheless surprised us by the close and logical reasoning he has brought to bear on his present subject, and the general acquaintance with its literature which he exhibits.

The best evidence of this we can lay before our readers is to extract some of the illustrations from Shakespeare's plays which Dr. Bucknill gives, and his commentaries thereon. And

first we shall select his running commentary on "The Merchant of Venice."

"In the following passage the intimate connexion between mind and body is sketched with exact physiological truth. Perhaps the most curious and undoubted instance of the mind's influence in the production of bodily disease, is jaundice caused by depressing emotion. It is not always 'crept' into, since bad news has frequently been known to cause jaundice in a few hours. In Dr. Copland's great and learned Dictionary of Medicine, it is stated, that, 'The most common exciting causes of jaundice are the violent mental emotions,' and in the list of these emotions, which he adds, he specially includes 'peevishness.' In Dr. Watson's 'Lectures on Physic,' that able physician states, that among the causes of jaundice 'the *pathemata mentis* play their assigned part; fits of anger and fear and alarm have been presently followed by jaundice.' He mentions an instance of a friend of his who became jaundiced from needless anxiety about an approaching examination, and adds, 'there are scores of instances on record to the same effect.' This curious medical fact is sketched with exact fidelity in the following passage. The effect of wine on the temperature of the liver, and despondency on that of the heart, are also unquestionably medical thoughts.

"'With mirth and laughter let old wrinkles come;
And let my liver rather heat with wine,
Than my heart cool with mortifying groans.
Why should a man whose blood is warm within
Sit like his grandsire cut in alabaster?
Sleep when he wakes? and creep into the jaundice
By being peevish?' *Act* i., *Scene* 1.

"The very same medical idea is more tersely expressed in 'Troilus and Cressida.'

"'What grief hath set the jaundice on your cheeks?'
Act i., *Scene* 3.

"The bad effect on the health of the two extremes of diet, abstinence and excess, are here marked.

"'*Nerissa.* For aught I see, they are as sick that surfeit with too much, as they that starve with nothing. It is no small happiness, therefore, to be seated in the mean; superfluity comes sooner by white hairs, but competency lives longer.'—*Act* i., *Scene* 2.

"The tyrany of desire over reason is here stated physiologically; the blood in this sense being always used poetically for the promptings of animal passion. A better knowledge has indeed exploded the theory, and attributed both reason and passion to the brain, though to different parts of it.

" ' *Portia.* The brain may devise laws for the blood; but a hot temper leaps o'er a cold decree: such a hare is madness the youth, to skip o'er the meshes of good counsel the cripple.'—*Act* i., *Sc.* 2.

" I have not met with an explanation of the term sand-blind. Sand may be a cause of blindness, as in Egypt, but this guess will scarcely help. The term was, probably, one in vulgar use.

" ' *Launcelot.* O heavens, this is my true-begotten father! who, being more than sand-blind, high-gravel blind, knows me not.
" ' *Gobbo.* Alack, sir, I am sand-blind, I know you not.'
Act ii., *Scene* 2.

" The common nature of man is argued medically and physiologically in Shylock's speech; the use of the word 'organs' being almost technical.

" ' Hath not a Jew eyes? hath not a Jew hands, organs, dimensions, senses, affections, passions? fed with the same food, hurt with the same weapons, subject to the same diseases, healed by the same means, warmed and cooled by the same winter and summer, as a Christian is? If you prick us, do we not bleed? if you tickle us, do we not laugh? if you poison us, do we not die? and if you wrong us, shall we not revenge?'—*Act* iii., *Scene* 1.

" A flesh wound across the muscle fibre bleeding a man to death is here the thought:

" ' *Bassanio.* Here is a letter, lady;
The paper as the body of my friend,
And every word in it a gaping wound,
Issuing life-blood.' *Act* iii., *Scene* 2.

" Shylock's exposition of antipathies might possibly have found its example from Shakespeare's own observation of these curious phenomena. The only one of the three which is common is that to a cat.

" ' Some men there are love not a gaping pig;
Some, that are mad if they behold a cat;
And others, when the bagpipe sings i' the nose,
Cannot contain their urine; for affection,
Master of passion, sways it to the mood
Of what it likes, or loaths.' *Act* iv., *Scene* 1.

" The following has reference to the practice of the old herbalists, who attributed peculiar virtues to plants gathered during particular phases of the moon and hours of the night.

" ' *Jessica.* In such a night,
Medea gathered the enchanted herbs
That did renew old Æson.' *Act* v., *Scene* 1."

Our next extract will be much longer, but is so illustrative of Shakespeare's knowledge of medicine, and of Dr. Bucknill's able reasoning in proof of the task he has undertaken, that we feel we would do him injustice were we to contract it. The commentary is on the play of "King Henry the Fourth.—Second Part."

"Northumberland, whom illness has prevented from taking part in Shrewsbury fight, when he hears from Mortimer the news of his son's death and the defeat of his army, commences his reply with the medical axiom, *ubi virus ibi virtus*, and describes the effect of delirium in restoring temporary strength to a fever-weakened patient.

"'In poison there is physic; and these news,
Having been well that would have made me sick,
Being sick, have in some measure made me well:
And as the wretch, whose fever-weakened joints,
Like strengthless hinges, buckle under life,
Impatient of his fit, breaks like a fire
Out of his keeper's arms; even so my limbs,
Weakened with grief, being now enrag'd with grief,
Are thrice themselves.' *Act* i., *Scene* 1.

"His friends exhort him to check this 'stormy passion,' which, if indulged, must destroy his health.

"'*Morton.* The lives of all your loving 'complices
Lean on your health; the which, if you give o'er
To stormy passion, must perforce decay.' *Act* i., *Scene* 1.

"Mortimer accounts for the defeat of the rebel army, by the want of good will to their cause among the soldiers. Queasiness, 'a tendency to nausea,' constrained by the will, is the most fitting expression which could be found, for the sense of disgusted taste caused by medicine.

"'And they did fight with queasiness, constrained,
As men drink potions.' *Act* i., *Scene* 1.

"Laughter-loving and laughter-moving Sir John appears to have suffered a little in health by the Shrewsbury campaign. He inquires of that 'whoreson mandrake' of a page, whom the Prince hath given him as a foil.

"'*Falstaff.* Sirrah, you giant, what says the doctor to my water?

"'*Page.* He said, sir, the water itself was a good healthy water: but, for the party that owned it, he might have more diseases than he knew for.' *Act* i., *Scene* 2.

"A good honest opinion this, though quite at variance with the doctrines of the old water-doctors, who pretended to recognise all

diseases from the aspects of this excrement. Sir John has fallen upon evil times, his tailor will not trust him and demands security, 'I had as lief they put a rat's bane in my mouth, as offer to stop it with security.' He is in ill health, and in ill credit, 'can get no remedy against this consumption of the purse, borrowing only lingers and lingers it out, but the disease is incurable.' In this frame of mind he encounters the chief justice, who has good cause and ample power to crush him, but Gascoyne, who had the courage to imprison the Prince of Wales, was magnanimously slow to take offence. Falstaff evidently knows this well, and has taken accurate gauge of his man; he pretends to sympathise with his lordship on his supposed illness: 'I am glad to see your lordship abroad; I heard say your lordship was sick; I hope your lordship goes abroad by advice; I most humbly beseech your lordship to have a reverend care of your health.' This put-off to the subject of the chief justice's inquiry, the night's exploit on Gadshill, not answering its purpose, Falstaff struggles hard to divert attention to the king's illness, which he describes as an apoplexy, and correctly refers to some of its causes and earlier symptoms, lethargic feelings, tingling sensations, deafness.

" ' *Fal.* And I hear, moreover, his highness is fallen into this whoreson apoplexy.'

" ' This apoplexy is, as I take it, a kind of lethargy; a kind of sleeping in the blood, a whoreson tingling.'

" ' It hath its original from much grief; from study, and perturbation of the brain: I have read the cause of his effects in Galen; it is a kind of deafness.' *Act* i., *Scene* 2.

" A wilful deafness on Sir John's part, for which the chief justice proposes to be his physician. The patient, however, objects:

" ' Your lordship may minister the portion of imprisonment to me, in respect to poverty; but how I should be your patient to follow your prescriptions, the wise may make some dram of a scruple, or indeed a scruple itself.' *Act* i., *Scene* 2.

" The chief justice, 'loath to gall a new healed wound,' lets the fat reprobate off very easily. But when he assumes the privileges of youth, and attributes to his opponent the harshness of age, 'you measure the heat of our livers with the bitterness of your galls,' the reverend man of law shows that he can play a good stick in the duello of controversy; and thus holds a glass up to the hoary debauchee, in which he may contemplate the physical defects of age.

" ' *Chief Justice.* Do you set down your name in the scroll of youth, that are written down old with all the characters of age? Have you not a moist eye, a dry hand, a yellow cheek, a white beard, a decreasing leg, an increasing belly? Is not your voice broken? your wind short? your chin double? your wit single?

and every part about you blasted with antiquity? and will you yet call yourself young? Fie, fie, fie, Sir John.' *Act* i., *Scene* 2.

"Falstaff exclaims against fighting on a hot day, and wishes he may 'never spit white again,' should it so happen. The colour of the spittle was, with the medical men of olden times, an important point of diagnosis, especially of temperaments. With admirable effrontery, Falstaff concludes the war of words by asking the great law lord to lend him a thousand pounds, and he comments on the the refusal as an old physician might do.

"'A man can no more separate age and covetousness, than he can part young limbs and lechery; but the gout galls the one, and the pox pinches the other; and so both the degrees prevent my curses.' *Act* i., *Scene* 2.

"Sir John, indeed, speaks feelingly on this point.

"'A pox of this gout! or, a gout of this pox!—for the one or the other plays the rogue with my great toe. It is no matter if I do halt; I have the wars for my colour, and my pension shall seem the more reasonable. A good wit will make use of anything; I will turn diseases to commodity.' *Act* i., *Scene* 2.

"The force of imagination in madness is referred to by Lord Bardolph, in his account of Hotspur's defeat, who

> "'With great imagination,
> Proper to madmen, led his powers to death,
> And, winking, leap'd into destruction.' *Act* i., *Scene* 3.

"The archbishop's bitter reproach on the fickleness of popular favour alludes to surfeit from greedy feeding, and to vomiting wilfully provoked, as by tickling the fauces, to relieve the overloaded stomach.

> "'The commonwealth is sick of their own choice;
> Their over-greedy love have surfeited:—
> An habitation giddy and unsure
> Hath he that buildeth on the vulgar heart.
> O, thou fond many; with what loud applause
> Didst thou beat heaven with blessing Bolingbroke,
> Before he was what thou wouldst have him be!
> And being now trimmed in thine own desires,
> Thou, beastly feeder, art so full of him,
> That thou provok'st thyself to cast him up.
> So, so, thou common dog, didst thou disgorge
> Thy glutton bosom of the royal Richard;
> And now thou wouldst eat thy dead vomit up.'
> *Act* i., *Scene* 3.

"The fat hostess of the immortal Boar's Head has sundry medical opinions. When she reminds Sir John of his oath, sworn

' upon a parcel gilt goblet,' she endeavours to help his recollection by the association of the idea with his head at that time broken, and with gossip Quickly's dish of prawns, which ' were ill for a green wound."

" Further on, she ' affects to nod' even in the technical language of the profession, though she uses the terms most malappropriately. Doll Tear-sheet is suffering, probably from the effects of a debauch, when the sympathizing hostess attempts to console and cheer her, feeling her pulse, and pronouncing on the symptoms.

" ' *Hostess.* I'faith, sweetheart, methinks now you are in an excellent good temperality: your pulsidge beats as extraordinarily as heart would desire; and your colour, I warrant you, is as red as any rose. But, you have drunk too much canaries; and that's a marvellous searching wine, and it perfumes the blood ere one can say, What's this? How do you now?

" ' *Doll Tearsheet.* Better than I was. Hem!

" ' *Host.* Why, that's well said; a good heart's worth gold. Look, here comes Sir John.

" ' *Fal. When Arthur first in court*—Empty the jordan—*And was a worthy king.* How now, Mistress Doll?

" ' *Host.* Sick of a calm; yea, good sooth.' *Act* ii., *Scene* 4.

" ' Temperality,' no doubt, means ' temperature,' and pulsidge, of course, means pulse, but how canaries ' perfumes' the blood is not quite so evident. The probable meaning is that it ' inflames' the blood. The ' calm' of which Doll was sick was, evidently, a qualm, though Falstaff wilfully misunderstands it in the quieter sense. The word ' jordan,' which occurs twice in this play, reminds one that Chaucer distinguishes it from the urinal.

" Prince Henry gives the best simile of Falstaff of which medicine is capable; namely, a wen, a monstrous fatty tumour.

" ' I do allow this wen to be as familiar with me as my dog.'
Act ii., *Scene* 2.

" This is far better than the one he applies to the same person in the *First Part of Henry IV.*, ' Thou swollen parcel of dropsies,' which evidently cannot hold water as a simile, and is a mere vituperative untruth.

" The distinction between rank and dangerous diseases, and slighter indispositions, is freely drawn in the dialogue between the king and Warwick. The ' good advice,' which in the mere distemperature of the body may render much medicine needless, would appear to mean what modern physicians call ' regimen.'

" ' *K. Henry.* Have you read o'er the letters that I sent you?
Warwick. We have, my liege.
K. Hen. Then you perceive, the body of our kingdom
How foul it is; what rank diseases grow,
And with what danger, near the heart of it.

War. It is but as a body yet distemper'd;
Which to his former strength may be restor'd,
With good advice, and little medicine:—
My lord Northumberland will soon be cool'd.'

Act iii., *Scene* 1.

"Is the formation of abscess referred to in Richard's prophecy?

"'The time will come, that foul sin, gathering head,
Shall break into corruption.' *Act* iii., *Scene* 1.

"The archbishop's reasons for joining the insurrection are couched in purely medical forms of thought. The state of the times is as a burning fever brought on by surfeiting; infectious also, and to be cured only by loss of blood. This is the prescription; but the hand of the ecclesiastic is not ready to carry it into effect, even under the figurative character of national physician. *Ecclesia abhorret a sanguine*, and therefore the priest comforts himself with the idea that he joins the rebels only for the purpose of dieting the rankness and of purging the obstructions of the social state. Though the argument may be illogical, the distinction drawn is very curious from our point of view.

"'*Archbishop.* Wherefore do I this? so the question stands.
Briefly to this end. We are all diseas'd;
And, with our surfeiting, and wanton hours,
Have brought ourselves into a burning fever,
And we must bleed for it: of which disease
Our late king, Richard, being infected, died.
But, my most noble lord of Westmoreland,
I take not on me here as physician;
Nor do I, as an enemy to peace,
Troop in the throngs of military men:
But rather shew a while like fearful war,
To diet rank minds, sick of happiness;
And purge the obstructions, which begin to stop
Our very veins of life!' *Act* iv., *Scene* 1.

"In the following passage the same speaker refers to the surgical fact, that a broken bone after union becomes stronger than before.

"'*Archbishop.* 'Tis very true:—
And therefore be assur'd, my good lord marshal,
If we do now make our atonement well,
Our peace will, like a broken limb united,
Grow stronger for the breaking.' *Act* iv., *Scene* 1.

"Falstaff's physiological essay on the character of Prince John is as replete with old medical theory as it is with wit.

"'*Falstaff.* Good faith, this same young sober-blooded boy doth not love me: nor a man cannot make him laugh;—but that's no

marvel, he drinks no wine. There's never any of these demure boys come to any proof; for thin drink doth so over-cool their blood, and making many fish-meals, that they fall into *a kind of male green sickness;* and then, when they marry, they get wenches: they are generally fools and cowards;—which some of us should be too, but for inflammation. A good sherris-sack hath a two-fold operation in it. *It ascends me into the brain; dries me there all the foolish and dull and crudy vapours which environ it:* makes it apprehensive, quick, forgetive, full of nimble, fiery, and delectable shapes; which deliver'd o'er to the voice (the tongue), which is the birth, becomes excellent wit. The second property of your excellent sherris is,—*the warming of the blood; which, before cold and settled, left the liver white and pale,* which is the badge of pusillanimity and cowardice: but the sherris warms it, and *makes it course from the inwards to the parts extreme.* It illumineth the face; which, as a beacon, gives warning to all the rest of this little kingdom, man, to arm: and then *the vital commoners, and inland petty spirits, muster me all to their captain, the heart;* who, great and puffed up with his retinue, doth any deed of courage; and this valour comes of sherris: So that skill in the weapon is nothing without sack; for that sets it a-work: and learning, a mere hoard of gold kept by a devil, till sack commences it, and sets it in act and use. Hereof comes it, that Prince Harry is valiant: for the cold blood he did naturally inherit of his father, he hath, like lean, sterile, and bare land, manured, husbanded, and tilled, with excellent endeavour of drinking good, and good store of fertile sherris; that he is become very hot and valiant. If I had a thousand sons, the first principle I would teach them should be,—to forswear thin potations, and addict themselves to sack.'

Act iv., *Scene* 3.

" Thin drink and fish meals over-cool the blood, and occasion 'a kind of male green sickness.' The physiology of this opinion is unquestionably sound, for a low diet would, above all things, tend to impoverish the blood. The phrase, 'a kind of male green sickness,' obviously indicates that Shakespeare knew that green sickness, *chlorosis,* was a disease almost peculiar to women. He refers to its ordinary form in that most poetic passage of *Twelfth Night,* as 'a green and yellow melancholy,' which fed on the damask cheek of the love-sick virgin.

" The remarkable medical word, inflammation, which was coined upon a false theory of the phenomena of that abnormal state of nutrition, which still, both in medical and common parlance, are expressed by this term, would appear to have been employed by Shakespeare to designate merely a state of excitement from strong drink. It is, indeed, the only place in which Shakespeare makes use of the word, and I am not aware that others have employed it in a non-medical sense. Milton uses it in the strictly medical sense.

" ' Dire inflammation, which no cooling herb,
Nor medicinal liquor can assuage.'—*Samson Agonistes.*

" The first of the two-fold operations of sack is founded upon a singular theory of Hippocrates, which will be best given in this place by a quotation from the learned ' History of Physic,' by Daniel Le Clerc, written in Shakespeare's century.

" ' *Of the Brain.*—The brain is reckoned by Hippocrates among the glands, because it appeared to him of the same nature, being white, fryable, and spongy, as they were. And he believed that the brain sucked up the superfluous humours of the body, like the other glands, which being all of a spongy nature, imbibe, says he, moisture easily.

" ' But there is this further of the brain; that the head being hollow and round, draws incessantly, like a sort of cupping-glass, the moisture from the rest of the body, which rises in a vapour; after which, it being over-charged, it sends it down to the lower parts, especially the glands, from whence comes defluxions and catarrhs,

" ' Hippocrates, in some other places, makes the brain the seat of wisdom and understanding, although, as we have seen before, he lodges the soul, which is the same thing with the understanding, in the left ventricle of the heart.'

" The crudy vapours which environ the brain are thus explained as the moisture which rises to this organ 'in the form of a vapour,' and which, being of a watery nature from thin potations, Sir John would, no doubt, think foolish, dull, and crude, in comparison with the more stimulating and generous exhalations of a good ' sherris sack.' It will be observed that Shakespeare follows Hippocrates in attributing not only this humoral function, but also the intellectual function, to the cerebral organ, or rather, in confounding the two together.

" ' The second property of your excellent sherris' has reference to another theory of Hippocrates, namely, that the veins, which were thought the only blood-vessels, had their origin in the liver. The father of medicine maintained that they come from the liver; the arteries from the heart. It appears, however, that in different parts of his works he expressed different opinions on the relations existing between the veins and the heart. The origin of the veins, however, in the liver is, at least in one place, decidedly expressed by him, and was by his successors developed into an article of physiological faith, which continued to be held even to Harvey's times. The following passage, from the biography attached to the Sydenham Society's edition of the ' Works of Harvey,' states this fact clearly.

" ' In ancient times, indeed, the veins were regarded, as they are esteemed by the vulgar at the present hour, as the principal vessels of the body; they only were once believed to contain true blood; the arteries were held to contain at best but a little blood, different from that of the veins, and mixed accidentally in some sort with the vital spirits, of which they are the proper conduits. In

former times, farther,—times anterior to Harvey, whether more remotely or more nearly,—the liver, as the organ of the hemapoesis, was regarded as the source of all the veins, or of all the proper blood-vessels; the heart, as the generator of heat and the vital spirits, was viewed as the mere cistern of the blood, whence it was propelled by the act of inspiration, and whither it reverted during the act of expiration, its flow to this part of the body or to that, being mainly determined by certain excitations there inherent or specially set up. By and by, however, the liver was given up as the origin of the venous system generally; but such anatomists as Jacobus Sylvius, Realdus Columbus, Bartholomæus Eustachius, and Gabriel Fallopius, may be found opposing Vesalius in regard to the origin of the vena cava, and asserting that it takes its rise from the liver, not from the heart, as the great reformer in modern anatomy had maintained.'—*The Life of Harvey*, p. 54.

" We must not overlook the very distinct terms in which Shakespeare, in this passage, refers to the motion of the blood, 'and makes it course from the inwards to the parts extreme.'

" ' The vital commoners and inward petty spirits muster me all to their captain, the heart.' This hypothesis, that the heart was the head quarters of the vital spirits which permeated the body through the arteries, adopted from Galen, was held, as Dr. Willis has shown, even by those anatomists who have been put forward as rivals to the great discoverer of the heart's true function; thus Servetus, in the much discussed passage of the ' Restitutio Christianismi,' says, ' The vital spirit has its origin in the left ventricle, the lungs assisting especially in its generation; it is a subtle spirit. Also Cæsalpinus, whose guesses at the heart's function have been put forward to detract from Harvey's originality, held that " the dilatation of the heart and arteries was due to the effervescence of the spirit." '

" The clearest, but most succinct account which I have met with of the physiological opinions of the sixteenth century, is in that wonderful melange of learning, dirt, and humour, ' The History of Garagantua and Pantagruel,' book iii., chap. 3. Rabelais, who was both a practising physician and a medical author, having translated and published some of the works both of Hippocrates and Galen, here condescends to place before the general public, and truly in the vernacular of his country, a concise account of the opinions which his brethren held it almost a matter of professional honour to conceal from the vulgar gaze under the cloak of a dead language. So far as I am able to judge, however, this clear-sighted exposition is, in many respects, far in advance of the medical doctrines of the period, as might indeed have been expected from the almost miraculous insight of its author, whose disguise of buffoonery scarcely concealed a most unsafe originality of thought, and saved him from the dire penalties which would otherwise inevitably have attended it. In another passage which I have quoted under Corio-

lanus, Rabelais expresses the doctrine of the function of the liver which is implied in Falstaff's disquisition, namely, that the liver conveys blood through the veins for the good of the whole body.

" 'The intention of the founder of this microcosm is, to have a soul therein to be entertained, which is lodged there as a guest with its host, that it may live there for a while. Life consisteth in blood; blood is the seat of the soul; wherefore the chiefest work of the microcosm is to be making blood continually.

" 'At this forge are exercised all the members of the body; none is exempted from labour, each operates apart, and doth its proper office. And such is their hierarchy, that perpetually the one borrows from the other, the one lends the other, and the one is the other's debtor. The stuff and matter convenient, which nature giveth to be turned into blood, is bread and wine. All kinds of nourishing victuals is understood to be comprehended in these two, and from hence in the Gothish tongue is called companage. To find out this meat and drink, to prepare and boil it, the hands are put to work, the feet to walk and bear up the whole bulk of the corporal mass; the eyes guide and conduct all; the appetite in the orifice of the stomach, by means of a little sourish black humour, called melancholy, which is transmitted thereto from the milt, giveth warning to shut in the food. The tongue doth make the first essay, and tastes it; the teeth do chaw it, and the stomach doth receive, digest, and chilify it. The mesaraic veins suck out of it what is good and fit, leaving behind the excrements, which are, through special conduits for that purpose, voided by an expulsive faculty. Thereafter it is carried to the liver, where it being changed again, it by the virtue of that new transmutation becomes blood. What joy conjecture you, will then be found amongst those officers, when they see this rivulet of gold, which is their sole restorative? No greater is the joy of alchymists, when, after long travail, toil, and expense, they see in their furnaces the transmutation. Then is it that every member doth prepare itself, and strive anew to purify and to refine this treasure. The kidneys, through the emulgent veins, draw that aquosity from thence, which you call urine, and there send it away through the ureters to be slipped downwards; where, in a lower receptacle, and proper for it, to wit, the bladder, it is kept, and stayeth there until an opportunity to void it out in his due time. The spleen draweth from the blood its terrestrial part, viz., the grounds, lees, or thick substance settled in the bottom thereof, which you term melancholy. The bottle of the gall subtracts from thence all the superfluous choler, whence it is brought to another shop or work-house to be yet better purified and fined, that is, the heart, which by its agitation of diastolic and systolic motions so neatly subtilizeth and inflames it, that in the right side ventricle it is brought to perfection, and through the veins is sent to all the members. Each parcel of the body draws it then unto itself, and, after its own fashion, is cherished and alimented by it. Feet, hands, thighs, arms, eyes, ears, back, breasts, yea, all; and

then it is that who before were lenders, now become debtors. The heart doth in its left-side ventricle so thinify the blood, that it thereby obtains the name of spiritual; which being sent through the arteries to all the members of the body, serveth to warm and winnow the other blood which runneth through the veins. The lights never cease, with its lappets and bellows, to cool and refresh it; in acknowledgment of which good, the heart, through the arterial vein, imparts unto it the choicest of its blood. At last it is made so fine and subtle within the rete mirabile, that, thereafter, those animal spirits are framed and composed of it; by means whereof the imagination, discourse, judgment, resolution, deliberation, ratiocination, and memory, have their rise, actings, and operations.'

"This certainly is a nearer approach to Harvey's discovery than any I have elsewhere met with in the physiology of the period, and might by a liberal interpretation be taken to imply, that what Shakespeare calls 'the nimble spirits in the arteries,' and 'the vital commoners and inland petty spirits,' was really blood which had been spiritualized or aerated in the lungs.

"The origin of the old opinions appears to have been the following passage in Hippocrates' 'Book on Aliments:'—'The root of the veins is the liver, and the root of the arteries is the heart; and from them blood and spirits are carried to all parts, and heat passes with the same.'

"In the following passage two similies are mixed with some want of clearness. The 'venom of suggestion,' or evil insinuations, acting as a ferment, might cause the contents of a closed barrel to expand, so that the vessel would leak but for the strength of its bonds. The supposed power of poison to swell and burst the body is expressed in several other passages.

> "'*King Henry.* Learn this, Thomas,
> And thou shalt prove a shelter to thy friends;
> A hoop of gold to bind thy brothers in:
> That the united vessel of their blood,
> Mingled with venom of suggestion,
> (As, force perforce, the age will pour it in,)
> Shall never leak, though it do work as strong
> As aconitum or rash gunpowder.' *Act* iv., *Scene* 4.

"When Romeo applies to the apothecary for poison, he asks for 'soon speeding gear' which will kill 'as violently as hasty powder fir'd.' The above passage shows the poison which Shakespeare thought capable of this immediately fatal effect, aconite, which is indubitably one of the most virulent poisons with which, even at the present day, we are acquainted. Pereira says of it, 'The root is undoubtedly one of the most fatal indigenous poisons,' and of its alkaloid, aconitina, 'in one case, one-fifteenth of a grain had nearly proved fatal;' and his editor, Dr. Taylor, says, 'a dose of a tenth of a grain would probably destroy life with great rapidity. It

is the most virulent poison known, not excepting hydrocyanic acid.' —vol. ii. p. 695.

"The king's illness is called an apoplexy, a term even now more loosely and vaguely employed by medical men than almost any other. It might be rightly applied to a sudden affection of the brain, caused by the 'incessent care and labour of his mind;' but failing sight and giddiness of the brain might equally arise from failure of the heart's action; defective supply of blood to the brain, being attended with the same symptoms of its failing function, as interference with its due nutrition from congestion or pressure. The suspension of the respiratory movements so that the 'downy feather' stirred not, though it lay at the gates of breath, would indicate that the sudden illness, supervening on the shock of good news, was faintness, and not apoplexy.

"'*K. Henry.* And wherefore should this good news make me sick?
Will fortune never come with both hands full,
But write her fair words still in foulest letters?
She either gives a stomach, and no food,—
Such are the poor, in health; or else a feast,
And takes away the stomach,—such are the rich,
That have abundance and enjoy it not.
I should rejoice now at this happy news;
And now my sight fails, and my brain is giddy:
O me! come near me, now I am much ill. [*Swoons.*
"'*P. Humphrey.* Comfort, your majesty!
"'*Clarence.* O, my royal father!
"'*Westmoreland.* My sovereign lord, cheer up yourself, look up!
"'*Warwick.* Be patient, princes; you do know, these fits
Are with his highness very ordinary.
Stand from him, give him air; he'll straight be well.
"'*Cla.* No, no; he cannot long hold out these pangs;
The incessant care and labour of his mind
Hath wrought the mure, that should confine it in,
So thin, that life looks through, and will break out.
. . . . . .
"'*War.* Speak lower, princes, for the king recovers.
"'*P. Humph.* This apoplexy will certain be his end,
"'*K. Henry.* I pray you take me up, and bear me hence
Into some other chamber: softly, pray.
Let there be no noise made by gentle friends
Unless some dull and favourable hand
Will whisper music to my weary spirit.
. . . . . .

Enter PRINCE HENRY.

" ' *P. Henry.* Heard he the good news yet?
Tell it him.
" ' *P. Humph.* He altered much upon the hearing it.
" ' *P. Hen.* If he be sick
With joy, he will recover without physic.
. . . . . .
By his gates of breath
There lies a downy feather which stirs not:
Did he suspire, that light and weightless down
Perforce must move.'

" The quick recovery of intellectual powers shows that Prince Humphrey miscalled his father's illness in naming it an apoplexy. The whole scene describes the illness as faintness from exhaustion. It concludes with an expression of want of power of further speech, power and desire to think being retained; though it must be owned that no reference had been made to pulmonary disease previous to the assertion that the lungs were wasted.

" ' *K. Henry.* More would I, but my lungs are wasted so,
That strength of speech is utterly denied me.'
Act iv., *Scene* 4.

" In the following passage Prince Henry's excuse for removing the crown affords another reference to the ' tinct and multiplying medicine,' the *aurum potabile*, as it was called by the old physicians, a term evidently in the poet's thought when he wrote the line in italics.

" ' I spake unto the crown as having sense,
And thus upbraided it: the care on thee depending,
Hath fed upon the body of my father;
Therefore, thou, best of gold, art worst of gold.
Other, less fine in carat, is more precious,
Preserving life in med'cine potable;
But thou, most fine, most honour'd, most renown'd,
Hast eat thy bearer up.' *Act* iv., *Scene* 4.

We would, in conclusion, especially call the notice of our readers to the extraordinary amount of information contained in Dr. Bucknill's preface, which chiefly consists in a most interesting account of the state of medicine and the medical corporations in the middle ages.

On the Theory and Practice of Midwifery. By Fleetwood Churchill, M. D., M. R. I. A.; Fellow and Professor of Midwifery and Diseases of Women and Children in the King and Queen's College of Physicians in Ireland. Illustrated by one hundred and nineteen highly-finished wood engravings. Fourth Edition, corrected and enlarged. London: Henry Renshaw, 356, Strand. Dublin: Fannin and Co, 41, Grafton-street. 1860. Fcap 8vo, pp. 705.

Clinical Lectures on the Diseases of Women and Children. By Gunning S. Bedford, A. M., M. D.; Professor of Obstetrics, the Diseases of Women and Children, and Clinical Midwifery, in the University of New York. Sixth Edition, carefully revised and enlarged. New York: Samuel S. and William Wood, 389, Broadway. 1860. 8vo, pp. 653.

Amongst those to whom the Dublin School of Midwifery owes its fame, Fleetwood Churchill holds a prominent position. None have done more to advance obstetric medicine in this country. In the United Kingdom of Great Britain and Ireland, throughout our vast colonial possessions, "over which the sun never sets," there scarcely exists a library, however small, belonging to a practitioner of medicine, that is not enriched by the possession of some one of the author's works. But we may go further, and say that Dr. Churchill's productions have conferred benefits on other lands than ours, his labours being highly appreciated over the continents of Europe and America. In what consists the value of Dr. Churchill's works? To what circumstance is due their extensive circulation, and why are so many new editions demanded? He owes no small portion of his fame to his careful and persevering research. His works are not so much original, as careful and faithful compilations from those of others. In perusing any of the author's editions, we do not so much read his own views as those of other great and illustrious physicians, who have been the pioneers of our science, and the ornaments of our schools. Hence, the real value of these works. They are expositions of the views of all the highest authorities on the subject of which each treats, and are thus equally indispensable to the student, the medical practitioner, and the lecturer. No one feels comfortable without his familiar name upon their shelves.

The volume in question, "On the Theory and Practice of Midwifery," now appears for the fourth time, and it may be deemed superfluous, that we, who have so often spoken

in high terms of its former editions, should give any lengthened notice on the present occasion. We are induced, however, to expend more space than we otherwise should, on account of the following circumstances. We are informed he "has added what he has found wanting, pruned what appeared redundant, and corrected what was vaguely or carelessly expressed." He has reconsidered thoroughly the question of craniotomy, and been enabled to "define more precisely the grounds of the operation, and to restrict its limits in a more definite manner," having been led to do so, in consequence of a controversy which had lately been forced upon him, relative thereto. This has caused the addition of a new chapter under the head of "Obstetric Morality." We are also presented with another on "Spurious Pregnancy." These we think sufficient reasons in themselves for giving a rather lengthened notice; but we are strengthened in that opinion when we read the following passage from the preface. Having alluded to an unpleasant controversy that had formerly existed between himself and Dr. F. Ramsbotham, relative to the author's copying the latter's plates without acknowledgment, Dr. Churchill apologises to that gentleman and all others who deem themselves thus aggrieved,—a step more dignified and correct than the curt and rather uncourteous manner he wrote in on a former occasion,—and concludes by saying, "I am too old to wish for quarrels, and too busy to have time for controversy." Dr. Churchill, then, having arrived at the acme of his professional career, and at a period of life when leisure to some extent is necessary to the comfort of the autumn of his life, may not feel inclined to spend the little time his extensive practice has left him in revising for new editions, or in giving to us any more original works. This, then, may be the last edition we shall see of his "Practical Midwifery."

The arrangement of the volume is precisely similar to that of former editions, so well known to every practitioner. The anatomy, normal and abnormal, of the female pelvis; the anatomy and pathology of the female organs of generation; their physiology, &c., and the signs of pregnancy; abortion; the occurrence of labour; labour in all its forms, and the operations that may be required in each; accidents connected with parturition; some of the most important diseases incident to childbed; and lastly, a chapter of 22 pages on "Obstetric Morality." To some of these subjects, which we left unnoticed on former occasions, we shall now draw the reader's attention.

The admirable epitome of the anatomy, physiology, and

some of the disorders of the female organs of generation, commencing the work, shows marks of revision, bringing the subject nearly up to the present day; but we must be allowed, with the greatest respect to the author, to allude to one or two subjects which we think demand some observations. Amongst the general deformities of the pelvis, there is one of peculiar interest, examples of which are rare, and the pathology of which is obscure. We allude to that originally described by, and called after, the illustrious Naegele, or the "oblique distortion." The author is noted for the care with which, so far as possible, he draws from all available resources of information anything tending to improve or advance his favourite science; and we are, therefore, surprised that he has permitted to escape his notice a case which occurred in this city, and which threw considerable light on the cause of this deformity. He has only stated that "it is extremely difficult to assign the cause of oblique distortion. Naegele states that he could detect no traces of rickets or mollities ossium in any of his cases. He (Naegele) believes that it neither arises from external causes nor from internal disease, but from an original anomaly of development. Dr. Rigby, however, thinks that ulcerative absorption must have existed at the sacro-iliac juncture, probably in early life." The case to which we allude occurred in the Dublin Lying-in Hospital, is mentioned in Drs. Johnston and Sinclair's Report of that Institution, and was published *in extenso* in this Journal for August, 1855. The nature of the deformity was discovered during labour, and its existence verified after death; so far, we believe, quite an exception to every other case on record. Moreover, the post-mortem examination showed decided traces of former disorganization of the soft parts about the sacro-iliac synchondrosis, corresponding to the flattened side of the pelvis, and a cicatrix was found on the skin over the joint of that side. The history of the childhood of the patient, as given by her mother, corroborated the appearance of the parts on post-mortem examination: in fine, no one, on reading the case, could avoid inclining to the same conclusion as Dr. Rigby, that in these cases "ulcerative absorption must have existed at the sacro-iliac junction, probably in early life." Indeed, this distortion, we consider, may exist amongst both sexes in this country, to a greater extent than is supposed, though it may escape detection. In the male, it is easy to understand how this state of the pelvis may not attract the particular attention of the pathologist; and in many females it may exist to such an extent as not to encroach obstructively on the pelvic space, and thus render natural delivery

impossible. On more than one occasion we have detected slight flattening of one side of the pelvis during labour, which subsequently progressed favourably, and terminated in convalescence; and we have been assured by an eminent physician of this city, that he has had frequent opportunities of observing disease of one or other sacro-iliac synchondrosis amongst the children of the poor in hospital practice.

It may arise from the fact that Dr. Churchill is an elaborate compiler, that sometimes his reader supposes he has not any very fixed idea on certain subjects himself. We occasionally find throughout his works what certainly appear to be contradictions; this is to be regretted, especially when they are so largely used by students. As an example, at page 53 he gives the following description of the menstrual discharge: "That it is excreted by the uterus, has been ascertained in cases of prolapse and inversion of the organ; and that it is really a *secretion* by its lining membrane, and *not blood* mechanically filtered through it, is, I believe, now generally admitted." But at page 57 he says: "It (the menstrual discharge) consists at first of *pure blood*, but in its passage through the vagina its fibrine is probably discoloured by the acid secretions of that part." Now, from the first of these two passages, it would appear that Dr. Churchill coincides with what he describes to be the generally received opinion, viz., that the menstrual discharge is a secretion of the mucous membrane, and not effused blood; whereas in the second, he distinctly states that it is pure blood at first, but that it becomes materially altered by the vaginal secretion subsequently. The only way we can discover for him to get out of this dilemma is, to say that pure blood can be *secreted* from a mucous membrane, and that it is so secreted from that of the uterus, and not poured out. Are we to believe such a theory? However the flow during menstruation may contain other matters of an excrementitious nature, surely, the chief of its components, as proved microscopically, is blood; and the discharge itself, to our mind, certainly cannot deserve the title of a secretion.

The author is more precise with respect to the two important questions arising out of the formation of the corpora lutea, viz., are they the result of pregnancy only, and do their presence indicate previous impregnation? and, if not solely the result of pregnancy, can the corpora lutea of pregnancy be distinguished from that of menstruation? Some time since, our Dublin school had no great doubts relative to true and false corpora lutea or those of pregnancy and menstruation, but latterly much discussion has arisen on the subject. The author,

having quoted the various authorities on the subject, gives the views of Dalton as follows:—

"The corpus luteum of pregnancy arrives more slowly at its maximum of development, and afterwards remains for a long time as a very noticeable tumour, instead of undergoing a process of rapid atrophy. It retains a globular or only slightly flattened form, and gives to the touch a sense of considerable resistance and solidity. Internally it has an appearance of advanced organization, which is wanting in the corpus luteum of menstruation. Its convoluted wall, particularly, attains a greater development, this portion measuring sometimes as much as three-sixteenths to one-fourth of an inch in thickness; while in the corpus luteum of menstruation it never exceeds one-eighth, and is almost always less than that. This difference in the thickness of the convoluted wall is one of the most important points of distinction. It will be much more striking when viewed *relatively to the size of the coagulum.* The colour is not by any means so decided a yellow, but a more dusky and indefinite hue. If the period of pregnancy be at all advanced, it is not found, like the corpus luteum of menstruation, in company with unruptured vesicles in active process of development. Thus," concludes Dr. Churchill, "if due care be taken, the corpus luteum of pregnancy can be distinguished from the changes which follow ordinary ovulation, by whatever name they are called; and, therefore, the presence of such a corpus luteum is *as sure an evidence of pregnancy as it has ever been considered.*"

The chapter on Spurious Pregnancy, a new feature in the work, the author frankly confesses, is chiefly compiled from the only monograph upon the subject, by Professor Simpson. This is a most interesting chapter, and a valuable addition to the volume. In a medico-legal, as well as in a purely medical point of view, this subject is one of great importance. And it is well that all students in medicine should be put in possession of whatever is known on the matter. Here we have pregnancy simulated in a most remarkable manner, and error in diagnosis may give rise to serious mischief. Pseudo-pregnancy may occur at any age. "Dr. O'Ferrall has recorded," says the author, "one case in a girl aged thirteen. I have seen one in another aged seventeen. Dr. Simpson thinks the complaint as frequent during the first year after marriage as at any other time. I have seen it in a woman who had borne several children, and Dr. Montgomery thinks it most frequent at the climacteric period." The symptoms are clearly defined by the author, but the greatest point of diagnosis is, according to Dr. Simpson, that, "however closely all the ordinary symptoms of real pregnancy may be represented and simulated in the

spurious affection, and however minutely even the individual idiosyncrasies sometimes seen in the former may be imitated in the latter, there is usually some deviation from the ordinary course of events, and some difference in the order and correspondence of the ordinary phenomena, which may serve to put you on your guard, and lead to the discovery of the true state of affairs." Auscultation will afford but negative evidence; examination, external and vaginal, may not clear up the case satisfactorily, but placing the patient fully under the influence of chloroform at once reveals the true state of affairs; the abdomen then becomes relaxed and perfectly subsides,—thus giving ample opportunity to test the condition of the abdominal organs. The question then arises, what is the pathology of the complaint? in our author's words, "what is the enlargement? Is it simply a gaseous distention?" The ingenious professor of Edinburgh, we are informed, put this to test by a novel but demonstrative experiment. He introduced a tube into the rectum, placing its free end under water, and then, putting the patient under the influence of an anæsthetic, watched for the appearance of bubbles on the water as the abdomen subsided. As the water remained undisturbed, Dr. Simpson was forced to look for another theory than gaseous distention; so he believes "the phenomenon most probably depends on some affection of the diaphragm, which is thrown into a state of contraction, and pushes the bowels downwards into the abdominal cavity." Concerning which theory Dr. Churchill, in our opinion, most justly remarks, that although he has no better explanation to offer, he confesses himself "far from satisfied" with it.

The classification of labours used by Dr. Churchill in his original editions has not been altered in the present. We have nothing new to observe relative to this portion of the volume, further than that each subject is brought up to the present period, and that all the statistics which have been published since the appearance of the third edition are inserted in the present one. Besides, the author has enriched this section of his work with much more of his own experience than was to be met with in former editions. This, in our opinion, adds greatly to the value of the present volume. There is one matter, however, on which we would wish to make one or two observations. The author lays considerable stress upon the stage of the labour in which delay occurs; attaching much more importance to tediousness in the second or expulsive, than in the first or dilating stage; and, no doubt, in the main he is correct in so doing. But he founds a division of orders of labour from

this in a manner which is not in accordance with our ideas on the point. For instance, "tedious labour" he defines thus:—"The head of the child presents, and the labour is terminated without manual or instrumental assistance, but it is prolonged beyond twenty-four hours from circumstances which occasion delay *in the first stage.* The placenta is expelled naturally." Then powerless labour is, when "labour is prolonged *in the second stage*, by causes which act on the uterine power primarily or secondarily, rendering the pains feeble and inefficient, or totally suppressing them. In consequence of the stage at which the delay takes place, certain symptoms arise which render speedy delivery imperative. The pelvis is sufficiently roomy." Now, these definitions to our mind, are too diffuse, nor do we conceive them justifiable.

We object to a *precise* period or duration—as originally introduced by Denman—being used as an element in the definition of any description of labour. A labour may be natural in every respect, and terminate within the stated period of twenty-four hours, even having each stage in due proportion, and yet from its after effects, show that it did not deserve the name of natural; but, on the contrary, that it should have been *made* instrumental. Twenty-four hours in labour to one woman might be a natural duration, but it might be an unnatural one to another. Then we do not see why inertia should not set in during the first stage as well as during the second; and that when occurring in the first stage, and causing delay, why that should not also be called a "powerless labour." We would rather throw away fixed classifications and set definitions, as much as possible, in practical midwifery, and call each case as it arrives:—Thus, tedious or inert in the first stage; tedious or inert in the second; tedious or inert in both stages. Obstructed in the first stage, in the second, and so on. Dr. Churchill does not look upon delay in the first stage of so great importance as we do. Certainly it is by no means so much to be dreaded as delay in the second; nevertheless, we confess it has been our experience that considerable delay in the first stage—whether the membranes were ruptured or not, but especially if ruptured—was not free from danger; and under any circumstances was a bad preparation for a happy second stage. Dr. Churchill gives a lengthened table of the duration of labour in the first and second stages, taken from the registry of the late Western Lying-in Hospital, Arran-quay, in this city, the data of which were entered under the inspection of Dr. Speedy and himself.

This table is unique, so far that we have never seen such a one elsewhere than in Dr. Churchill's book.

Now, had each case come under the immediate notice of either Dr. Speedy or Dr. Churchill; had they, with their knowledge and tact in midwifery, noted the duration of each stage in each case themselves; we would look upon this as one of the most valuable tables in our possession. But, when it is remembered that these data were, for the most part at least, registered by the students attending the Western Lying-in Hospital—which was chiefly, indeed, almost completely, an extern charity—and noted from their recollection; when we consider the reliance that could be placed upon an uneducated student's power of distinguishing the progressive dilatation of an os uteri, and the difficulty that must often have been experienced, in fixing the precise time of labour that had elapsed prior to their taking charge of the case; we confess these statistics are not of much value.

The chapters on Puerperal Fever and its allies, are much improved, full of information up to the present date, and will be found invaluable to the student and practitioner. The care that the author has taken in revising this portion of his volume is deserving of the highest praise.

We have a most valuable addition to the present volume of a chapter headed "Obstetric Morality." This title had been chosen by a contributor to "The Dublin Review" of April, 1858, for a paper written for the purpose of showing "the immorality of the operation of craniotomy *under any circumstances*, if the child be alive." As the exponent of this, one of Dr. Churchill's earliest publications was chosen; and the writer's tone towards Dr. Churchill was, to use his (Dr. C.'s) own language, "somewhat uncharitable in its imputation of motives." Dr. Churchill felt himself called upon to answer this article, and he now presents us with a reprint of his reply, which, we are bound to say, while it is free from the slightest expression that could hurt the feelings of the most sensitive member of the Church of Rome, is remarkable for its sound and straightforward reasoning, and its crushing refutation of the doctrines brought forward by his opponent.

As the tendency of a segment of society of the present day is decidedly mediæval, it is no matter of surprise to us, that this subject, which caused so much debate long since, should be exfodiated again, and endeavoured to be forced upon the people. The question *has* been brought forward in 1858, and "craniotomy under any circumstances, if the child be alive,"

has been condemned on moral, religious, and obstetrical grounds.

The writer in the "Dublin Review" had not the assurance to base his theological objection to this operation merely on the fact that the Church of Rome forbade it, but having deduced his argument from Holy Scripture—"an authority," says our author, "to which I implicitly bow: we have, so far, common ground." We shall briefly follow our author's arguments on the theological objections which involve the moral, and which, if confuted, the medical questions are not of much importance *to the obstetrician.*

The destruction of an unborn babe under any circumstances is a breach of the Sixth Commandment, showed by the edict, "whoso sheddeth man's blood, by man shall his blood be shed, for in the image of God made he man."

"If," says the author, "the latter text be more than authorization of capital punishment for murder, which I do not deny, it is clear that it must be subject to limitation; otherwise it would prohibit killing in self-defence, or in defence of another, which is considered lawful by the Roman Catholic Church; and it would render war unlawful. If, then, *it be thus modified, there is no reason why the limitation may not be extended so as to include the operation in question,* provided I can show that it cannot justly be considered a breach of the Sixth Commandment."

Dr. Churchill then defines what murder is, as laid down by the highest law authorities, all of whom assert the necessity of a *malice prepense, or aforethought,* attended by such circumstances as are the ordinary symptoms of a wicked, depraved, and malignant spirit—necessary to distinguish murder from any other description of homicide, and continues—

"I think it will be at once admitted that killing a child in utero, which I shall prove can be by *no means born alive,* and which *must* die in a few hours, but the prolongation of whose life, *even for those few hours,* will most seriously, if not irreparably, endanger that of the mother, cannot be brought under the definition of murder. There is no malice aforethought, expressed or implied; it is done from necessity, and without any evidence of a 'wicked, depraved, or malignant spirit;' it is not, therefore, in any true sense murder. Had there been the slightest reason for thinking so, I have no doubt that there would have been a provision made by law, just as there has been against criminal abortion; so far from this, 'an infant in its mother's womb, not being *in rerum naturâ,* is not considered by law as a person who can be killed *within the description of murder.*'—(1 Hale, P. C., p. 433.)"

Then comes the question of homicide, which is either justifiable, excusable, or felonious; justifiable when prescribed by law; "or is owing to some *unavoidable necessity*, as in the case of an attack on life, property, or chastity, when the death occurs in self defence," which is admitted by Roman Catholics, inasmuch as, the author informs us, the Most Rev. Dr. Cullen, in his book entitled, "What every Christian must know and do," says: "It is not a sin to defend your own life *or another's life*, chastity, or property of great value, when unjustly attacked, even though it cannot be defended without taking away the life of him who attacks it." So that the author continues:—

"I shall be able to show that craniotomy, under proper circumstances, is 'an *unavoidable necessity*,' and if, therefore, it be legally justifiable to take one life for the protection of another, we have precisely the conditions applicable to our case, with this additional justification, *that the life we take is forfeited*, i.e., it will inevitably cease, as the child *cannot* be born alive."

But the Roman Catholic Church believes that if the body of this child is destroyed, his soul is destroyed also. And this question is so important, that we shall be excused if, with the author, we quote his opponent on this point, *in extenso:*—

"It is no less certain that this soul which has been created by God, and infused into the body at the first moment of existence, has, in the language of holy David, been conceived in iniquities, that is, that it has inherited the stain inflicted on all his posterity by the prevarication of Adam. Nothing defiled can enter into heaven, and the defilement of this soul can only be washed out in the waters of baptism. To it, in common with all mankind, have been addressed the words of the Saviour: 'Unless a man be born again of water and the Holy Spirit, he cannot enter the kingdom of heaven.' It is strange that those who profess to be guided exclusively by Scripture should deny that the external rite of baptism is necessary to salvation, for it is plainly and repeatedly inculcated in the Word of God. That the second birth by water and the Holy Ghost, spoken of in John, iii., means the external rite of baptism, may be inferred from the fact that our Lord's disciples soon after began to baptize, as we learn from the beginning of the following chapter. The word 'to baptize' signifies 'to wash,' and on the very last occasion on which our Lord addressed his Apostles after his resurrection, He told them, 'All power is given to me in heaven and earth; going, therefore, teach ye all nations, baptizing them in the name of the Father, and of the Son, and of the Holy Ghost.' When the people were melted to compunction of heart by St. Peter's first sermon, they asked what they should do. But Peter said to them: "Do penance and be bap-

tized every one of you, in the name of Jesus Christ, for the remission of your sins.' They, therefore, that received his word were baptized. That this baptism was by water is manifest by what occurred when Philip preached Jesus to the eunuch; for 'as they went on their way, they came to a certain water, and the eunuch said, See, here is water; what doth hinder me to be baptized? And they went down into the water, both Philip and the eunuch, and he baptized him.' Ananias told St. Paul, when sent to him by God, 'Rise up, and be baptized, and wash away thy sins.' So also, when St. Peter saw the Holy Ghost falling on the Gentiles, he exclaimed, 'Can any man forbid water, that these should not be baptized?' This idea is strongly conveyed in various places by St. Paul. 'Christ loved the Church,' he says, 'and delivered himself up for it, that he might sanctify it, cleansing it by the laver of water in the word of life.' Again, he calls the 'laver of water' the 'laver of regeneration, and renovation of the Holy Ghost,' alluding manifestly to our Lord's words (John, iii.), and thus clearly establishing that the regeneration, without which no one can enter into the kingdom of God, is baptism by water. 'Not,' he says, 'by works of justice which we have done, but according to His mercy He saved us, by the laver of regeneration, and the renovation of the Holy Ghost.' "

We shall now append Dr. Churchill's reply to this:—

"Now, putting aside the question of when the soul is first joined to the body, on which subject Holy Scripture is silent, I am quite prepared to admit, simply and implicitly, the authority of the texts quoted. I do not deny that baptism was by water, nor that baptism, is one of the sacraments, generally necessary to salvation;' but all these texts involve one condition, viz., *the possibility* of baptism. This, I think, must be admitted *primâ facie*, and I object to apply such texts to cases for which we have no shadow of proof that they were intended. It appears to me that the blessings of baptism, and the penalties for its neglect, can be, and were intended only to apply to those children whose baptism was possible. The duty and the power must be correlatives. Now, of children dying in utero nothing whatever is said in Holy Scripture, yet my reviewer deduces from the texts above quoted the doctrine that the souls of such children are lost. As I have said, I cannot give him textual authority for the contrary, but I can adduce an example which proves my point completely. When the thief on the cross said, 'Lord, remember me when thou comest into thy kingdom;' the answer was, 'This day shalt thou be with me in paradise.' Of *his* salvation, therefore, there cannot be the slightest doubt, and—yet he was not baptized.

"Of course, if the reviewer had stated that the operation of craniotomy had been prohibited by the Roman Catholic Church, there would have been no necessity for argument. The members of that Church would feel bound by its decision, and it would have been no business of mine to contest the point; but as he has made

it depend upon reasoning from Holy Scripture, I have felt quite at liberty to question the accuracy of his conclusions. The teaching of the Church of England and Ireland, on the subject of baptism, is to be found in her Book of Common Prayer, and is so accessible, and, indeed, so well known, that any detail is quite unnecessary here. She recognises baptism as one of the sacraments 'generally necessary to salvation,' and declares that 'it is certain, by God's Word, that children which are baptized, dying before they commit actual sin, are undoubtedly saved.' But, in accordance with her declaration that 'Holy Scripture contains all things necessary to salvation; so that whatsoever is not read therein, nor may be proved thereby, is not to be required of any man that it should be believed as an article of faith, or be thought requisite or necessary to salvation;' not having found any expression as to the result of those dying unbaptized, when baptism is impossible, she is silent; content to leave their future lot to the loving-kindness and tender pity of Him who died for all.

"Morally and theologically, then, the case stands thus:—My reviewer contends that destroying the child in utero is murder. I have proved, on the highest legal authority, that this stigma is unjust, and that it does not come under any true definition of murder, inasmuch as it involves no malice; that it is even something less than justifiable killing, inasmuch as the child's death is inevitable without our interference; we do but hasten it.

"Again, he maintains that baptism being a sacrament essential to salvation, all children dying or destroyed in utero are lost. I say, on the contrary, that his authority from Scripture fails, inasmuch, as in the cases quoted, baptism was possible; whereas, in these it is not, whether the operation be performed or not; and I have given one undoubted instance of salvation without baptism, when its administration was impossible. For my own part, whilst I feel the tenderest regard for the lives of these innocents, and would do my best to preserve them, if that fail, I have no fears for their souls, for whom Christ died, but look forward with sure and certain hope to their resurrection to eternal life."

Having disposed of the moral and religious objections to the operation of craniotomy when the child is living, in order to preserve the life and health of the mother, Dr. Churchill proceeds to combat the obstetrical objections to the operation under these circumstances; and it is not to be wondered at, after handling subjects the consideration of which are, to so great a degree, beyond the sphere of his usual studies, in such an able and convincing manner, that when he comes to touch upon his own ground, he is peculiarly excellent. We have given, in copious extracts, the arguments *pro* and *con* on the moral and religious bearings of the case, as in these are contained the chief objections against the operation of craniotomy by the

Church of Rome, and as they may not be generally known to our readers. Having devoted so much space already to this notice of the author, we shall not give any sketch of the obstetrical side of the argument, the points of which are so well known to our obstetric readers. Suffice it to say, that this brilliant chapter forms one of the best digested dissertations on the operation of craniotomy, viewed in all its bearings, we have ever read, and, to our mind, is a complete and triumphant answer to the author's opponent. We consider Dr. Churchill deserves the thanks of the profession in giving a wide circulation to his "Obstetric Morality," and that he need make no apology for having added it to his volume in the form of an appendix.

In conclusion, if anything can augment the fame Dr. Churchill has already acquired, it is this fourth edition of his "Practical Midwifery," which contains as an appendix, one of the most important obstetric papers that has issued from the press for many years.

The next volume we have to notice is of very different nature from that of Dr. Churchill. Though so far resembling our first subject, as being connected with obstetric medicine, properly so called, yet it differs from Dr. Churchill's book, in consequence of its most peculiar style, and from the fact of its being compiled without any method whatever. Dr. Gunning S. Bedford, of New York, presents us with a sixth edition of his "Clinical Lectures on the Diseases of Women and Children." These lectures were given on the moment, and in the order that each case presented itself, so that we have a heap of subjects bundled together without any arrangement. The reader must, to enter into the spirit of this volume, conceive a lecture-room, with—so far as we can glean from the author—a consultation or examination room off it; the class occupy the benches of the former; the professor examines his case in the latter; and then, introducing the patient to his audience, describes the symptoms, makes his diagnosis, prescribes, and gives a brief lecture on the pathology, symptoms, diagnosis, and treatment, to the class. This is a most admirable mode of teaching, and much sought after by the students of the University of New York, in which institution Dr. Bedford holds the obstetric chair, since he speaks of his *large and attentive class of pupils.*

Unlike by far the largest portion of our Young Ireland students, the attention of their American brethren is not distracted either by their peg-top trowsers, the slender hirsute crop on

their upper lip, or any stray matter bordering on the ridiculous, that may meet their eye or catch their ear. The students of New York, so far as the professor's class is concerned, are of a different stamp, and sit wholly intent upon the teaching of their master.

We have perused this volume most attentively, and have never yet read a book with more pleasure and profit. It is true the author's style is quaint, and would appear, were he not almost of the same standing, to be a plagiarism on that of an eminent and excellent Philadelphian professor. We are favoured with the complete conversation of the doctor with each of his patients, which has an extraordinary effect to us Britishers—such a style of medical writing not being the fashion amongst us. Perhaps, were it attempted by one or two, so that we might become familiarized with it, this method of writing might not only lose its strangeness, but be considered an instructive way of teaching a certain class of students, who might require some species of reading-made-easy to spoon-feed them with practical medicine. For our own part, we prefer a plain, continuous statement of the symptoms and diagnosis of a case, to the theatrical method of Dr. Bedford's teaching; and yet we were actually fascinated into reading his entire volume. To give the reader an idea of the professor's style, we shall transcribe a scene as enacted in his theatre. A certain Mrs. C. enters, and, having replied to many of the professor's queries, the scene continues thus:—

"'Why do you think you have falling of the womb, Mrs. C.?' 'Because one of my neighbours told me so, sir.' 'Is that neighbour a doctor or a woman?' 'Oh! her name is Mrs. Mulligan. But the doctor told me so too.' 'What is Mrs. Mulligan's business?' 'She takes in washing, sir.' 'Does she practise medicine?' 'Oh! no, sir.' 'What does she know about falling of the womb?' 'I don't know, sir; but she told me that her cousin, Mrs. Higgins, had falling of the womb, and she knew I had it too.'"

The professor then turns to his class, and observes:—

"'Well, gentlemen, this is one species of logic, and you will often meet with it in practice.'"

Then, again addressing Mrs. C.:

"'When the doctor told you that you had falling of the womb, did he examine you before giving his opinion?' 'No, sir; he was Mrs. Mulligan's doctor, and he called over one day and said that Mrs. Mulligan was right, and I had a falling of the womb.' 'Did he order you to do any thing?' 'Yes, sir, he told me to put a plaster on my

back.' 'Did Mrs. Mulligan know that the doctor ordered the plaster?' 'Yes, sir, and she said it would cure me as it did Mrs. Higgins.' 'Did you use the plaster?' 'No, sir, I don't see how a plaster on my back could draw my womb up.' 'Nor I, either, my good woman.'"

Mrs. L. presents herself, who is aged 32; a widow, the mother of two children, the youngest of which is eight years old, when the following conversation ensues:—

"'Well, madam, what is the state of your health?' 'Thank you, sir, I am much better.' 'Did you take the sulphur as directed?' 'Yes, sir.' 'Are your bowels more regular than they were?' 'Yes, sir, and my courses have returned upon me.'"

The professor then addresses the class:—

"The patient before you has suffered for the past two years from suppression of the courses. She also had been afflicted with bleeding piles. It was a case of vicarious menstruation. The indication I mentioned to you was to remove the constipation, which, no doubt, was the cause of the hemorrhoids."

To the patient:

"'How are the piles, madam?' 'They don't trouble me now, sir.' 'I am glad of it, my good woman. Good morning.'"

The replies of the patients are often very characteristic; for instance, when the professor says to a poor woman, "Your child appears very sick, madam," and she answers, 'He is *all that*, sir," who can be surprised at the question that follows:—"How many weeks were you crossing the Atlantic?" These are sufficient examples of the author's method of publishing his cases, which to some minds would appear ludicrous from its homeliness; but, supposing the contrary, we do not see that it tends to any advantage, but rather consumes a great deal of space which might be better occupied. We also have to find fault with a certain degree of pomposity, apparent throughout the work. Thus, talking of the absence of the secretion of milk, he calls it an "agalaxy." The functional derangements accompanying uterine disease he describes as "due to the action of the ganglionic *department*."

Again, addressing his students, he tells them that "soon you will be vested with all the rights and privileges of the *doctorate;* you will return to your homes, and, after having received the congratulations of friends, you will commence the responsible and arduous duties of your profession."

At page 100 he pours out an eulogium on woman. He

speaks of her as the tender and endearing being that should call forth "the admiration of the philosopher, and the fervid praises of the poet." Our philosopher, in fine, becomes so fervid, that he turns poet himself in woman's behalf, and, not having "wingéd words" at his own disposal sufficiently powerful and mellifluous for his purpose, he draws upon those of *our* national bard, and expresses woman's ministration to man thus:—

> "There, drink my tears while yet they fall;
> Would that my bosom's blood were balm,
> And well thou knowest I'd shed it all,
> To give thy brow one minute's calm.
> Nay, turn not from me that dear face;
> Am I not thine—thine own loved bride—
> The one, the chosen one, whose place
> In life or death is by thy side?"

It would be something new to us, in this unromantic school of Dublin, to hear a jolly old professor spouting out the burning love lines of our dear departed Tommy, to a large class of embryo Irish doctors. What an effective thing it would be to have a bit of "Paradise and the Peri" declaimed *ore rotundo* at the introductory lecture of the College of Surgeons, Dublin. We wish some of our professors would take the hint, and enliven the prose of their prelections, by giving us a touch of the poets occasionally. But, as regards the author's quotation, we are cold enough to consider that the space occupied thereby might be better filled. Just after the recitations comes a case, headed, "Critical period of female life—final cessation of the menstrual function in a widow, aged forty-nine years;" thus, with the rapidity of the Peri herself, the author "shoots his flight" from the death-scene of her whose sigh the lost spirit carried to heaven as a propitiatory present; and lights on a widow aged forty-nine, whose menstrual function had ceased. The sequel does not inform us whether the widow had been listening to the doctor's effusion; but there can be no doubt that she lost ten ounces of blood, and took ten grains of calomel, fifteen of jalap, and two of antimonial powder, followed by a rattling dose of Epsom salts next morning.

The author gives us a very interesting history at page 113, of a young lady who was supposed to be labouring under an organic affection of the heart. However, on a critical examination it was proved to be but a functional disorder, the organ being affected through the means of love, acting on the ganglionic *department*. The author finds out that her affections were centered on a gentleman who was objectionable with

papa and mamma, on account of his poverty. The good professor, then—and God bless him for it—never rested till he overcame the parents' objections, and obtained consent, which completely restored the heroine. "I received," says our author, "great credit for the recovery, it being looked upon as something miraculous; and yet I am convinced that, without the *efficient aid of the lover*, death would have triumphed over all professional science and skill." He then adds: "The renewal of their engagement was soon followed by matrimony, and the next important and very natural event in their history was, the birth of a son." We would ask the author, would not the birth of a *daughter* have been just as natural an event; though perhaps not, as we believe there are more males than females born.

Notwithstanding the great quantity of room taken up with useless matter, this volume contains a due proportion—indeed we might say, an extraordinary proportion—of sound sense. The author is a well-informed, practical physician. Bearing as his motto "*sublatâ causâ, tollitur effectus*," he keeps it ever before him, and never loses an opportunity of inculcating it upon his class. There is not a derangement during infant life, during pregnancy, or after delivery; not one single disease connected with the female organs of generation, which is not noticed—and that right ably—in this excellent book. The various treatment adopted is sound as practical. None can read this volume without deriving advantage, and we confidently recommend it to the profession, especially the junior members of it. We forgive our author's peculiarities—in fact, we doubt if we were better acquainted with him, whether we should not like them—on account of his host of good qualities; and we sincerely trust he may be long spared to fulfil his noble and charitable mission, and to be an ornament to the University, the chair in which he so worthily occupies.

Bidrag til Kundskab om de Sindssyge i Norge. Af LUDVIG DAHL, Reservelæge ved Gaustad Sindssygeasyl. Christiania. Det Steenske Bogtrykkeri. 1859. 8vo, pp. 305. With three lithographic illustrative Maps.

A Contribution to our Knowledge respecting the Insane in Norway. By LOUIS DAHL, Physician Extraordinary to the Gaustad Lunatic Asylum.

THE work before us is the result of observations made during official journeys undertaken by the author, with the sanction

and at the expense of the Government, and continued during a period of about seven months, with a view to ascertain the cause of the great preponderance of insanity in certain districts of Norway. The volume contains three principal divisions, the first treating of the details of the occurrence of insanity in Norway; the second of the etiology of mental affections in that country; and the third of the condition and treatment of the insane.

Much of the carefully collated information contained in the first division of the work is of almost purely local interest, consisting of comparative views of the frequency of insanity in the several districts of Norway. It may suffice for our present purpose to state, that by the Census of 1855, it was ascertained that the number of insane in the kingdom was then 5071 in a population of 1,490,047, or 1 in 293·8, exhibiting an increase since the preceding Census in the population of 12·16 per cent., and in the number of the insane of 18 per cent. The proportion of insane was greater in the country districts than in towns; in the three last decades the number of idiots was about three times greater in the former than in the latter. The author concludes the first division of his work by instituting a comparison between Norway and some other countries, and observes that, "although no other country, with which I am acquainted, exhibits such unfavourable circumstances as Norway, it will be seen that the difference is not so great as has been supposed."

Of the causes of insanity in Norway, the most important are hereditary predisposition, the intermarriage of near relations, and the use of spirituous drinks. That the preponderance of insanity in certain parts of the kingdom is due to causes included under the third head, will appear from the following comparison between the number of sober individuals and of insane in each of the five dioceses of Norway. It will be seen that the last district in the table alone furnishes an exception to the general rule, that the smaller the number of sober individuals in a district, the greater is the proportion of insane to the population.

	Sober Individuals in 100 of the Population.	Proportion of Insane.
Diocese of Christiansand, . .	56·2 . .	1 in 246
„ Christiania, . . .	59·5 . .	1 „ 287
„ Trondhjem, . . .	63·4 . .	1 „ 296
„ Tromsö, ...	70·5 . .	1 „ 361
„ Bergen, ...	72·6 . .	1 „ 345

An examination of the smaller subdivisions of the kingdom yields results very similar to the above. The exceptions, of which, as is to be expected, there are some, are for the most part not important.

The author expresses his opinion that the abuse of brandy, especially by the fathers, but partly also by the mothers during pregnancy and suckling, has exercised a considerable, perhaps the most considerable influence in the production of the large number of idiots in the kingdom.

Dr. Dahl next proceeds to review the several causes of acquired insanity. These he enumerates as depressing mental emotion; states of bodily weakness, produced, for example, by famine, injudicious bleeding, parturition, suckling, self-pollution, religious influence, &c. Each of these causes is illustrated with a number of cases, giving a highly practical character to the work. The third section of the second part is devoted to the consideration of the several causes of idiocy.

The last part of the volume is, as we have already stated, occupied with the condition and treatment of the insane.

Original Contributions to the Practice of Conservative Surgery. Being a Selection of the Surgical Cases occurring in the Practice of JAMES G. BEANEY, M. R. C. S. E., formerly Surgeon to the 3rd Royal Lancashire Regiment in the Mediterranean, and Surgeon to Her Majesty's Hospitals in Garrison during the Crimean War; Member of the Medical, the Microscopical, and the Philosophical Societies of Victoria, &c., &c. Melbourne: George Robinson. 1859. 8vo, pp. 168.

THIS book is one that gives us a two-fold pleasure,—and this not for any great intrinsic merit of its own, for the writing is rather of the quality suited for the ephemeral article than for the more enduring octavo,—not that we would depreciate it,—for one source of gratification which we confess to having felt in its perusal arises from the conviction it forces upon our minds, that the writer is both well read and well taught. Not a page that does not bear evidence of his acquaintance with the sayings and doings of the best living authorities, or the writings of those who have passed away. But it is a maiden effort: and, had it appeared under other circumstances, we should have been content to dismiss it with a brief word of commendation and encouragement, seasoned, it may be, with a word of warning as to those faults of which its writer will be the first to

give a practical acknowledgment in his more mature productions.

In the dedication to Mr. Syme, and in the preface, it is stated that this is the first medical book produced in the Australian Colonies, and this is our other and principal ground for pleasure in seeing it on our table. To a book which appears under such circumstances we would not give a cold salutation, even if it came in a homely garb, and with an aspect of colonial poverty. But in the present case there is no need for an appeal *ad misericordiam:* not only is the refection set for our mental appetite, varied and light as suits the summer season, but the service is unexceptionable. Both printer and publisher have done their parts well, and all parties concerned have reason to be satisfied with what their labours have produced for our entertainment. The press-work, paper, and binding would do credit to the best houses in this or any other country, and we may, in all honesty, congratulate the Colony on having made such a successful debut in medical literature.

We cannot claim such an acquaintance with medical matters at the antipodes as to know whether Mr. Beaney's strictures are all fully deserved; but, if they be, he has thrown a shell among his brethren that will explode with some noise, and, if he gets a hard knock or two in the melée, he must bear them with due philosophy, remembering that such is the lot of all pioneers of improvement. The use of chloroform would seem to have made small way in Australia: not only its novelty and the manifest dangers that attend its administration would seem to blind colonists to its advantages, but, as we suppose, there will be some difficulty in obtaining it pure, and much hesitation, among those who have not seen it used, in handling it for operative purposes. Such causes for a long time operated extensively, and still do so to a minor degree, in the remote provincial districts of the old country, and it is only to be expected that, with greater difficulties of intercommunication, our Colonies would remain much longer dull to the blessings of the greatest discovery of the age. Similar remarks apply to the entire class of operations known by the name of conservative surgery, most of which have derived their very being from the possibility of anæsthesia. Mr. Beaney's book will be of great service in removing prejudices and enlightening ignorance, such as we allude to, and, if he occasionally hits somewhat hardly, to borrow a metaphor from the ring, we must set it down to his more recent and more vigorous training. There is no doubt that, in a rapidly rising colony, old-fashioned surgery will rapidly go to the wall when at-

tacked by one who is well up to the improvements of the last decade, and on this point we venture only to suggest to Mr. Beaney that, while men will look to the young for improvements in the *modus operandi*, it is to the experience of age that they will equally trust for the *methodus medendi*; therefore, while he attacks the errors of his colonial confreres, let him steer clear of personalities; he will find it a difficult task, perhaps, but a needful one, for few, if any, young men possess the qualities to compel the recognition of the public if they do not bear the stamp of professional approval. Few, if any, can stand at first, unless aided by the wisdom and by the good will of their elders in the profession, and the most able young man who can operate with promptness and judgment will often badly need the advice which experience can alone supply in the after-treatment of his cases.

We do not propose giving any analysis of Mr. Beaney's work. It consists of several short chapters on such subjects as excision of the hip-joint, removal of the maxillary bones, and traumatic stricture of the urethra, illustrated or rather founded on cases. Some of the subjects treated of, such as obstructive dysmenorrhœa, scarcely come under the title of *conservative* surgery. They are, however, more or less connected with the *reforms* of the healing art during the last ten or fifteen years, and most of them have such a necessary connexion with anæsthesia that the excellent chapter on that subject forms a most appropriate conclusion to the volume.

The Thermo-Electrical or Natural System of Medicine.—The Science of Life, Health, and Disease: explanatory of the Mysteries of Man's Existence, and all the phenomena of Life; with the Nature, Causes, and Treatment of Disease. The fruit of forty years' professional experience. By CHARLES SEARLE, M. D., M. R. C. S. E. Illustrated with Plates. London: L. Booth. 1860. 8vo, pp. 284.

WE do not profess ourselves to be amongst the number of those who object to popularizing scientific or professional subjects, or who believe that the education of the masses on such topics as hitherto have been confined to the initiated is likely to degrade the status of the more strictly professional man, by familiarizing the mind of the public with what has but too frequently, and perhaps for too long a period, been considered as more sacred than the Eleusinian Mysteries. Entertaining such

ideas, then, we can safely assert that we approached the perusal of this work in no unfriendly spirit. Coombe's able work on the "Management of Infancy," Churchill's "Advice to Midwives," Smee's "Emergencies and Accidents," Thompson's "Dictionary of Domestic Medicine," even dear old Buchan's "Domestic Medicine," passed in hurried review in our mind's eye; and we could not, whilst admitting the claims of such popular authors, of *malice prepense* refuse admission into their ranks of one other collaborateur.

On opening the work, what particularly struck us was the fact that it aspires to two classes of readers—the general public, and the members of the medical profession; to enlighten the former on domestic medicine, and, at the same time, to give them an insight into the more recondite mysteries of anatomy, physiology, therapeutics, &c.; whilst for the latter he serves up a so-called new system of medical philosophy—an *olla podrida* compound of the Brunonian, the new Italian, and the electrical schools, flavoured with a not very clear or lucidly expressed idea of Liebig's theory of the metamorphosis of tissue. We confess, however, that it is with considerable apprehension we venture on a critical examination of either department of his work. We have read the preface, and dread his wrath. We submit an extract, which will acquit us, we are convinced, in our readers' minds, of the charge of poltroonery, to which this candid admission would otherwise justly expose us:—

"The views propounded are in principle—true, I believe in all sincerity—in reality I know them to be so;—but too simple—too true—too readily to be understood, I fear, to meet with the countenance and support of those whose interests are opposed to simplicity, order, and easy comprehension. In principles, I repeat, I am right—perfectly so, though in some particulars I may not be so correct:—on these I take my stand, and challenge inquiry,—the truth, and the truth *only*, is what I seek, and desire to see promulgated, from whatever quarter it may be derived. But let not those —whose interests are opposed to the dissemination of knowledge on these subjects among the people—attempt to silence me—as the propounder of new doctrines—by the common subterfuge of little minds —by inuendo, and the exposure of trivial defects,—from which no work is altogether exempt; in despite of such defects, which I am too conscious the work contains, I know it to be a right valuable one —enunciating principles worthy the attention of the public, and the best consideration of the profession; and if true—which the fullest conviction of my understanding assures me they are—the whole phenomena of life are now unmasked, and the treatment of every disease brought within the confines of a few general prin-

ciples—definite in kind, simple in nature, and readily to be understood;—and which, therefore, it is right and proper should generally be made known."

Hard words these, my masters! Either we must swallow all the crudities, theoretical and practical, that Dr. Searle chooses to thrust down our throat, or be accused of sacrificing science to self-interest, and of endeavouring to upset truth by subterfuge and inuendo.

As we have said, the work is addressed to two classes of readers—professional and general. As our remarks, however, are intended for the former, we shall direct our attention to bringing under their notice a few examples of the scientific character of the theories here inculcated, merely contenting ourselves with the observation, so far as the latter are concerned, that almost any other work on the subject will be found more valuable for the purpose of enabling them to meet an emergency in the absence of a medical man—the sole object with which any of them should ever be consulted. One of the avowed objects of the work is to uproot the fallacies of mesmerism, homœopathy, hydropathy, and other empirical forms of treating disease, and yet not one line do we find devoted to an exposure of these fallacies—in fact, the only one of these that is at all noticed is hydropathy, and that in terms of praise. So far, then, as this portion of his labour is concerned, we may fairly state that the book has failed of its mission.

One of the few original theories, if not the only one, started by Dr. Searle is an attempt to explain the anæsthetic action of chloroform. Here we shall allow himself to speak:—

"Hence the regulated inhalation of chloroform, that is to say, of chloroform with a sufficient admixture of atmospheric air (the chloroform, I presume, having, from its highly inflammable nature, a greater affinity for oxygen than the hydro-carbonaceous elements of the blood have); this, then, on being received into the blood from the lungs now on its return to the heart, seizes upon and combines with the oxygen, thus deoxidizing the blood in the lungs, and depriving the general current of its chemico-vitalizing properties. Its effects are accordingly to lower the tone of the heart, to which it is now applied, and next, that of the brain, to which, in common with the rest of the organs, it is then circulated. The immediate deprivation of power thus induced, from defect of electro-nervous excitement, produces results precisely analogous in character to that occasioned by sudden loss of blood—the loss of sensation and volition, the first in the series of functions to be deprived of power in man's progress towards death, which would follow by asphyxia, were the inhalation of the chloroform more perfect."

"The highly inflammable nature" of chloroform! The postulate in this theory is of so startling a character that, however it may suit Mr. Public, we fear that it will not go down with the profession, whose *self-interest!* alone will call on them to question it. We are glad, however, a few pages further on, to find it established, on the part of so competent a chemist, that the free acid of the stomach is hydrochloric acid. This long-mooted point is now decided in favour of this acid, lactic acid never being allowed, even for one minute, to appear in court. It is true that he has not favoured us with the nature of the experiments by which he has solved this *quæstio vexata;* but we may well be contented to receive it on the *ipse dixit* of the chemist who discovered a property of chloroform that had hitherto escaped the attention of the host of chemists engaged in its investigation.

His practical views are of the true Sangrado school—bleeding and purging. His arguments in favour of the first of these are highly original, and afforded us one of the heartiest fits of laughter that we have enjoyed for some time. We shall not be so selfish as to deprive our readers of a similar indulgence:—

"No other arguments than those adduced, are required to satisfy my mind of the utility of the practice of blood-letting, on the ground at least of its being far other than an unnatural remedy: and for what other purpose, I would ask, were leeches, which are to be found in every country, created—but in the bounty and beneficence of Providence for man's use?"

And, to continue this style of argument, we suppose that tigers and lions were created to eat us up, and fleas (more universally present than leeches) to ——. But it is too ridiculous; argument would be wasted in attempting to refute such a method of reasoning.

Running throughout the practical part of the book we find a favourite prescription of his, honourable mention of which is repeatedly made—a pill, composed of calomel, aloes, and Castile soap, one grain of each. The aloes is introduced into this mass, according to Dr. Searle, to *expedite* the purgative action of the calomel—a physiological property of aloes of which future writers on materia medica should take note, as hitherto it has been overlooked in every work on the subject with which we are acquainted; and we have also to express to him our sense of gratitude for putting us up to the fact that the popular synonym for the plant furnishing us with nux vomica is "the crowfoot." We had been for some time aware that the

seeds, from their fancied resemblance to gray eyes, and from being poisonous to crows, had been termed by our German neighbours *Krähenaugen*, or *crow's-eyes;* but, up to the moment at which we write, we laboured under the impression that the *crowfoot* was an herb of the ranunculaceous family; but, as we live, we grow older, and it is our own fault, and not Dr. Searle's, if we do not also grow wiser.

After a careful perusal of Dr. Searle's present work, we can record no other opinion of the portion devoted to the establishment of a new theory of medicine than that the one which he suggests is, as we have already termed it, an *olla podrida* of various theories long since enunciated by other authorities, and these not even expressed by him accurately, or in the clearest language. This might be pardoned; but what language can be severe enough to use towards one who, in a work addressed to the general public, speaks thus of a learned profession, of which he is himself a member:—

"Unsatisfactory, in a high degree, it assuredly is; for what can be said of a system or structure of any kind without a foundation? of principles of treatment derived from theories of disease based upon assumption only,—the ingenious sophistries of individuals, as Boerhaave, Cullen, Brown, Broussais, the accepted oracles of their day, whose dogmas have been embraced as articles of faith, and constitute the basis of all that is orthodox? Nevertheless, such is the condition of the science of medicine at the present time. It merits not, therefore, the name of a science. A science, to be really such, should have an imperishable foundation—its principles should be founded on the laws of nature, which are immutable in character, and simple when understood."

This, in the hearing of men who are still deploring the loss of such physicians as Graves, Bright, and Addison—in an age rendered remarkable by some of the greatest, the brightest contributions to the philosophy of our noble profession!

Therapeutics and Materia Medica: a Systematic Treatise on the Action and Uses of Medicinal Agents, including their Description and History. By ALFRED STILLÉ, M. D. 2 vols., 8vo. Vol. I., pp. 813. Vol. II., pp. 975. Philadelphia: Blanchard and Lea. 1860.

IN our last Number we had to welcome a work on Practical Pharmacy, the produce of an American pen. In this we have to consider, emanating from the same country, a voluminous

treatise on Therapeutics and Materia Medica. The very nature of the subject forbids our expecting from the author any very great amount of novelty—the labours of his predecessors necessarily having left for him but little beyond a work of compilation. How this duty has been discharged, it remains for us to inquire, and to enable our readers to express a just opinion on the subject, we shall now proceed to indicate the course adopted by Dr. Stillé in the production of his present Treatise, and the materials of which he has availed himself for the instruction of those who consult his pages.

The work, as we shall presently see, being especially therapeutical in its nature, to the great exclusion of materia medica and pharmacy, the author has properly adopted a classification founded on therapeutical properties in preference to any other. The following is the arrangement that he has pursued:—

CLASSIFICATION.

I. Medicines which allay local irritation.	Lenitives.	
II. Medicines which repress local action.	Astringents.	
III. Medicines that irritate the part to which they are applied.	Irritants.	
IV. Medicines which promote nutrition.	Tonics.	
V. Medicines which stimulate the whole economy.	General Stimulants.	
VI. Medicines which stimulate the cerebro-spinal system.	Cerebro-Spinal Stimulants.	Narcotics. Antispasmodics.
VII. Medicines which especially stimulate the spinal nervous system.	Spinants (*Tetanica*).	
VIII. Agents which depress the whole economy.	General Sedatives.	
IX. Medicines which depress the vascular system.	Arterial Sedatives.	
X. Medicines which depress the nervous system.	Nervous Sedatives.	
XI. Medicines which produce a discharge from particular organs.	Evacuants.	Epispastics. Errhines. Sialagogues. Emetics. Cathartics. Expectorants. Diaphoretics. Diuretics. Emmenagogues. Anthelmintics.
XII. Medicines which modify the nutrition of the body, without producing any antecedent phenomena.	Alteratives.	

Previous, however, to entering on the consideration of the

various agents that constitute these several groups, Dr. Stillé has given us a chapter generally introductory to the entire subject of therapeutics. We propose entering somewhat into detail as to the manner in which our author has here acquitted himself; but, previous to so doing, we must submit for our readers' consideration one passage that has our full concurrence, and that will strongly impress on the minds of such as peruse it the vast difficulties attending the prosecution of this department of medical science:—

"But it is not a careless or a random experience which is competent to solve the dark and intricate problems of therapeutics. A clear understanding of the terms of any problem is the first and an essential step towards its solution. In the present case there is, upon the one side, man, but not a perfect animal organism. He has come into the world imperfect, with the deformities, the defects, the morbid tendencies of his ancestors; he has grown up under the most varied circumstances of climate, locality, &c., all of which have moulded his physical condition, and developed in him peculiar susceptibilities; he may be the subject of almost innumerable diseases, of various grades, in various combinations, and at different stages, and each one modified by his preëxistent tendencies. On the other side there is the medicine, varying in its effects with its origin and mode of preparation, its dose and combination, even in the same healthy organism, but infinitely more so according to the peculiarities of the patient and the disease with which he may be affected. It would seem almost impossible that the product of two such uncertain quantities should ever be foreseen, or, in other words, that therapeutics should ever attain to the certainty even of a rational art, or, still more, of a science. Although it is not a science, yet it involves a large number of scientific elements; for, as will appear in the sequel, in many therapeutic problems there are chemical or physical conditions which can be accurately determined, and it is probable that with the progress of investigation the number of these will hereafter be greatly increased. Nevertheless, the modifying influences of the causes already noticed and of many others are so powerful and controlling, that in practice it is seldom possible to foresee the precise result even when the mode of action of the remedy is approximatively known. As was before remarked, those remedies are most efficient whose action upon the economy is most obscure."

Dr. Stillé proceeds then to consider the various ways in which medicines may act, entering on the subject very fully, but not at all in the exhaustive manner that we might have expected from the size and special character of his work. For instance, his allusion to the celebrated experiment of Messrs. Morgan and Addison is as follows:—

"Some writers who maintain the exclusive operation of sympathy in the mutual relations of remote parts cite with satisfaction the experiment of Morgan and Addison, in which a carotid artery of one dog having been made to interchange its current with the corresponding artery of another dog, one of the animals was poisoned by inoculating it with a concentrated solution of strychnia. It died in seven minutes with characteristic tetanic symptoms, while the other dog manifested none of the effects of the poison. But it is to be observed that a very small portion, comparatively, of the blood of the poisoned animal could have found its way into the sound one, because the circulation in the former began immediately to languish under the influence of the poison; and, moreover, that it was arterial and not venous blood which was transfused, and therefore not as highly charged as this latter with the poison."

This, in our opinion, is a very summary way of disposing of a most important experiment bearing directly on the subject under discussion, and is neither doing the gentlemen in question or his reader fair justice. No one from reading these few lines could ever imagine that the principal object of Messrs. Morgan and Addison's experiment was to upset what they conceived to be a mistake of the illustrious Magendie. They seem to have laboured under the impression that this distinguished physiologist wanted to support the theory that the poison acted by direct contact with the brain, whereas Magendie taught that the entire of the strychnos family acted through the spinal marrow, implicating the brain, but indirectly. The experiment was instituted thus with this object, and is open to far more serious critical objections than those brought forward by Dr. Stillé: granting that a portion of the strychnia did get into the circulation of the second dog, it must have been infinitesimal compared with that which was circulating in the blood of the first dog; first, mechanical difficulties, such as want of perviousness of the tube, would act as a drawback to the experiment; next, as Dr. Stillé properly remarks, the toxic action of the strychnia in the first dog would, of course, retard the passage of the blood from his system into that of the second dog. Again, it must not be forgotten that the supply of blood to the brain is conveyed through four vessels, of which but one was put under contribution in this experiment, so that the second dog, presuming he got the entire supply of blood traversing the carotid artery of the first dog, only got *one-fourth* of the quantity of poisoned blood that in the first dog was supplied to his brain alone, and, by the nature of the experiment, this amount of poisoned blood was directed to the special supply of that organ which Magendie

contended for, was *but indirectly implicated by the natural family from which the poison was selected;* and, finally, as asserted by Blake, the greater probability was, as the poison began to act on dog No. 1, so far from its being conveyed into the system of dog No. 2, that an influx of pure blood from the latter would take place into the former, thus giving rise to a very serious source of fallacy in the experiment.

Dr. Stillé's remarks on the fact of the action of medicines being produced by absorption, are open to a similar charge of not having exhausted the subject. Magendie's first experiment on the subject is introduced, but the far more conclusive one is omitted. In the first experiment alluded to by Dr. Stillé, Magendie divided all the soft parts, except the vein and artery, of one of the hind legs of a dog whilst under the influence of opium; to a wound in the foot he then applied a portion of upas tienté, and in four minutes the dog expired. Many objections were alleged against this experiment: the opium, used for humane purposes, was said to have vitiated the entire value of it. Lymphatic vessels are found on the coats of the vessels, and through their agency the poison might have gotten into the system. To obviate these and similar cavils, Magendie repeated the experiment, with the additional precaution of dividing the vessels also, and reconnecting them by cylinders of quills, in which condition, equally as in the former, a fatal result ensued, clearly establishing the fact of the action of the upas tienté at all events being due to absorption. This last, by far the most convincing experiment of the two, is not alluded to by Dr. Stillé.

In his therapeutics also we feel that we have a right to complain of Dr. Stillé; in his remarks on the influence produced by age on the doses of medicines we read:—

> "At the two extremities of life; the function of absorption displays opposite degrees of activity; it is excessive in infancy, and deficient in old age. On this account, chiefly, the average doses of medicines for adults must be greatly diminished for children, and somewhat increased for the aged."

Now this is an erroneous assertion, by no means confined to Dr. Stillé's work alone, and still, a more dangerous impression could scarcely be made on gentlemen about to enter on the practice of our profession:—"The average dose for adults must be somewhat increased for the aged"! We should like to be informed whether this holds true of opium, of stimulants generally, of cathartics, &c., &c.

Again, we find the following statement with reference to

the method of treating malignant cholera by means of saline injections into the veins:—

"In cholera, the blood becomes thick from the loss of serum, and saline solutions injected into the veins have, in some instances, restored its influidity, but rarely, if ever, been the means of saving life."

Now, when we reflect that this method is never employed but in extreme cases, and when we consider the result of the statistics furnished to us by Dr. Griffin, viz., of 282 cases, the record of which he could find so treated, 221 died, and 61 recovered, we must say that we think Dr. Stillé has stated the case a little too strongly against the value of this plan of treatment. For there can be but little doubt of the probable result that would have ensued in these 61 cases, all at the time in the very extreme condition of collapse, had they not been so treated.

On the whole, we must say that Dr. Stillé has not done as full justice to this section of his work as we are entitled to expect in a Treatise so entirely devoted to therapeutics as his professes to be. So far as it is entitled to be considered a work on materia medica, its claims are but slight indeed. In describing both the organic and inorganic articles in the materia medica, he contents himself with but the most meagre account of them; sketching, rather than accurately describing the various pharmaceutical processes; rarely, if ever, attempting to explain them. The principal, if, indeed, not the only merit inherent in his work, is the very full manner in which he enters into the therapeutical history of the several articles of the materia medica. This, in itself, is quite sufficient to recommend it to our favourable consideration, and we are tempted to submit to our readers, as a sample of his style, and the manner in which he handles his subject, rather a long extract, in which he discusses *one* of the therapeutical uses of belladonna. To introduce the entire article, from its length, would be simply impossible.

"*As a Prophylactic against Scarlatina.*—When Hahnemann, about the year 1800, was engaged in observing the effects of medicinal agents, he noticed that belladonna produced a papular cutaneous eruption and dryness of the throat. These symptoms he imagined to be a sort of artificial scarlatina, and, at once pressing the fact into service of his new theory, decided that belladonna was the natural specific for curing, as well as preventing, scarlet fever. Thus early, too, he betrayed his unfitness for a liberal profession by vending the medicine as a secret remedy. This alleged power of

belladonna has done more, perhaps, than anything else to sustain the impudent heresy of homœopathy, and for that reason practitioners have refrained from testing its truth. To do so is, however, both impolitic and unjust; for the allegation is not in itself repugnant to belief, and, if really true, is too important to be slighted.

"In estimating the power of any agent to prevent a given event, it is necessary first to know the probabilities of that event taking place independently of all interference. We know that nearly all unprotected persons exposed to small-pox will contract the disease; hence the protective power of vaccination may be inferred with an approach to accuracy. In the case of scarlatina, on the other hand, the degree of contagiousness is not ascertained, for we constantly see families in which one or two persons only, out of perhaps eight or ten, are attacked. In any given instance, therefore, if belladonna were administered to all the members of a family of which one already had the disease, it would be impossible to say, if the disease did not extend, whether its arrest were owing to the exhibition of the medicine or not. But, it is no less certain, if this substance were given to many families, or portions of families, during an epidemic of scarlatina, and, as a general rule, those who had taken it escaped the contagion, while a large proportion of those who had not taken it were attacked, it is certain, we say, that the protective power of belladonna against scarlatina would be unequivocally proven, although the exact degree of that power might not be determined. And such, in reality, we believe to be a fair induction of all the facts which have been recorded concerning this question.

"Up to 1830 nearly all the published evidence had been collected by Bayle, who states the following results:—Leaving out of the account those authors who have omitted to mention the number of their patients, it appears that, in the midst of scarlatinous epidemics of greater or less severity, 2,027 children and adults made use of the belladonna, of whom 1,948 escaped the disease, and 79 contracted it. These experiments were, in general, performed by competent persons, and the accuracy of their results cannot fairly be questioned. It may, however, be objected that the results are, after all, of a negative value, although derived from an extensive observation, and that Lehmann and one or two others, after trying belladonna faithfully in epidemics of scarlet fever, concluded unfavourably to its protective power. The paucity of the cases of some objectors, and the meagreness of the details furnished by others, deprived their opposition of real weight; and, moreover, the circumstances under which some of the experiments above alluded to were performed render it obligatory to accept their results as true, or to believe, what is more improbable, their untruth. Thus, Dusterberg, at the commencement of an epidemic of scarlatina at Warburg, in 1820, administered belladonna to all the children under his care, but, for the purpose of determining how far the influence of the medicine was real, he withheld it from one child in each family. Every one of the latter was attacked, while but few of the former,

and who had taken the belladonna during four or five days only, experienced the disease. This instance appears to be conclusive, for its authenticity does not appear to be denied.

"Of later experiments upon the subject under consideration, there are two whose observations were made upon an extensive scale. In the winter of 1840–41, M. Stievenart tested the question in several of the villages around Valenciennes, where scarlatina had already broken out. In one of the villages two hundred out of two hundred and fifty persons took the belladonna, and escaped the fever, while fourteen of the remaining fifty were attacked, and four died. In another village, the medicine was administered to nearly all the pupils of the public school; these, without exception, escaped, while several who would not take the belladonna were attacked.

"During an epidemic of scarlatina in Buncombe County, South Carolina, Drs. Erwin and Hardy kept an account of two hundred and fifty children who were placed under the influence of belladonna, and of that number less than half a dozen had the disease, and they but mildly. Those families which did not take the preparation were, with scarcely an exception affected.

"An epidemic of scarlatina occurred at the Charleston (S. C.) Orphan House, in 1838. There were 114 inmates of the asylum, and the arrest of the epidemic among them is ascribed to the persevering administration of belladonna. Dr. J. C. Morris administered the medicine to one-half of the children at the Preston Retreat, Philadelphia, and found that 53 per cent. of these were attacked, while 73 per cent. of the remaining half had the disease.

"On the other hand, when experiments like the above were tried at Heriot's Hospital, Edinburgh, by Dr. Andrew Wood, and at the Orphans' Asylum, Boston, by Dr. Alley, it was found, to use the words of the latter, that 'there was no manifest difference between the two classes as to susceptibility to the contagion.'

"If, now, we turn to authorities who have not published the details of their experiments so much as the conclusions which they drew from them, and from the collective materials pointed in a preceding paragraph, we shall still find the prophylactic virtues of belladonna affirmed by the most eminent physicians, particularly by Hufeland in Germany, and Guersant in France; the latter of whom states that he never failed to employ the method we are discussing, and that he had remarked the almost certain immunity of those who were subjected to it. The dissentients from this view include, it is true, several eminent persons, but, with the exceptions already stated, they do not, in general, appear to have formed an opinion deduced from any enlarged personal experience, but rather to have based their objections on the results of inadequate trials, or upon a very natural distrust of the original source of the statement that belladonna is a prophylactic against scarlatina. Thus Joseph Frank, in the work above quoted, expressly declares that he had not experimented with belladonna, because the use of Hahnemann's

ridiculous infinitesimal doses is repugnant to common sense, and because he was conscientiously opposed to making a doubtful experiment upon healthy children with a medicinal dose of one of the most active poisons. It is enough, in refutation of such arguments, to say the numerous successful trials which have been referred to, were made, not with the phantom doses of homœopathy, but with such as, although minute, were sufficient, in a great many instances, to produce an eruption on the skin and dryness of the throat, and yet without, in a solitary case, giving rise to unpleasant symptoms.

"On a review of the whole subject, we feel bound to express the conviction that the virtues of belladonna as a protective against scarlatina are so far proven, that it becomes the duty of practitioners to invoke their aid whenever the disease breaks out in a locality where there are persons liable to the contagion, particularly in boarding schools, orphans' asylums, and similar institutions, and among the families of the poor; whenever, in a word, it is difficult to place the healthy at a distance from the sick. The dose which it is proper to prescribe under such circumstances may be thus stated. Dissolve from one to three grains of fresh and well prepared extract of belladonna in an ounce of cinnamon water, adding a few drops of alcohol to prevent fermentation. Of this solution may be given, two or three times a day, one drop for each year of the child's age, to be so administered for two weeks, or longer, if the danger should continue. It is not pretended that the protection, such as it is, is permanent. On each recurrence of an epidemic the same process must be repeated."

This extract, as involving a question still undecided in the minds of many able and thoughtful physicians, must prove of interest to our readers. We rather incline to agree with Dr. Stillé, that the merits of the case still require investigation, more, perhaps, out of respect and deference to the position of those who advocate its value than from any certainty on our own part of its utility. Such of our readers as would wish still further to investigate the question will find an admirable paper on the subject in the pages of the "British and Foreign Medico-Chirurgical Review" by Dr. Warburton Begbie. We cannot agree with him, however, in his approbation of the sentiments expressed by the late learned and lamented Dr. Pereira. "I conceive twenty cases of failure are more conclusive against the opinion than one thousand of non-occurrence." For, in this case, presuming its efficacy to be demonstrated, why should occasional failures be urged against it more than against vaccination? Within the last few months we were in attendance on a young man, in a rather severe attack of small-pox, who had been carefully vaccinated, and who had an attack of well-marked small-pox some years previously and subsequent

to the vaccination. In this case, neither vaccination, nor the very disease itself, had afforded him immunity, and still no one questions its undoubted efficacy.

We admit the rigour with which such experiments should be conducted; we confess ourselves to be perhaps amongst the sceptics; yet we agree with Dr. Stillé's conclusion. In common with many other practitioners, we have had our own limited experience on the subject; and were we not well aware of the capriciousness displayed in its invasion by the disease in question, we might have been inclined to admit its claims on the *post hoc propter hoc* method of reasoning. As to the eruption alluded to by Hahnemann, as the homœopathic reason for its employment, this is precisely what makes us doubt its efficacy; for, not to enter on the general question universally affecting all homœopathic doctrines—that *similar symptoms do not constitute similar diseases*—we for ourselves must assert that the eruption is anything but a general result of the administration of belladonna. We have repeatedly administered it, and in full doses, in cases of nocturnal incontinence of urine, and do not remember in a single instance the occurrence of this eruption, though in all cases carefully looked for.

Amongst the most interesting portions of Dr. Stillé's work are his historic recollections of the medicines that we now employ. In general these are most accurate; but his recollections of the Eau Medicinale d'Husson are not in accordance with ours. He evidently either has not seen or does not credit the account given by Mr. Bushell, in his interesting paper read before the Pharmaceutical Society, March 10th, 1852. As this involves a question of historic interest, we shall not hesitate to reproduce a portion of that communication here.

"The earliest medical notice I can find of the Eau Medicinale is by Dr. Jones, in the year 1810, who had been on the continent in the years 1802 and 1803, with a gentleman who was a great sufferer from gout, and had then heard of the remedy of Husson, and which, on his return home in the year 1805, he was induced to make use of. He derived so much benefit from it, that from this time it made great advances as a remedy in England, and, to quote the words of the editor of the 'Edinburgh Medical and Surgical Journal,' 'noblemen and philosophers concurred in sounding its praises, if not in dancing hornpipes, in testimony of the new agility and flexibility of toe with which it had endowed them; and the President of the Royal Society, Sir Joseph Banks, who experienced the most

extraordinary deliverance from his arch enemy, is said to have made it almost his pocket companion.' It now became a great desideratum to ascertain its composition. Rhododendron, Chrysanthemum, Digitalis purpurea and lutea, Tobacco, Elaterium with opium, and many other plants, supposed to be analogous in their action to the magic water, were stated to form its basis.

"Dr. Pereira states in his 'Materia Medica':—

"The circumstances which have led to the extensive employment of colchicum in gout are the following:—About seventy years ago, M. Husson, a military officer in the service of the King of France, discovered, as he informs us, a plant possessed of extraordinary virtues in the cure of various diseases. From this plant he prepared a remedy called Eau Medicinale, which acquired great celebrity for abating the pain, and cutting short the paroxysm of gout. Various attempts were made to discover the nature of its active principle. In 1782, Messrs. Cadet and Parmentier declared that it contained no metallic or mineral substance, and that it was a vinous infusion of some bitter plant or plants. Alyon asserted that it was prepared with gratiola; Mr. Moore that it was a vinous infusion of white hellebore with laudanum; Mr. Want that it was a vinous infusion of colchicum. Although most writers have adopted Mr. Want's opinion, we should bear in mind that the proofs hitherto offered of its correctness, viz., analogy of effect, cannot be admitted to be conclusive, as is well shown by the fact that they have been advanced in favour of the identity of other medicines with the Eau Medicinale.

"I should apologize for making so long an extract from Dr. Pereira's work, but as it contains a perfect epitome of all that I have ever seen on the subject of the so-called gout specific, and as it leaves the question of the identity of its basis open to further inquiry, I hope that the circumstantial evidence which I now propose to lay before the Society may somewhat clear up the point.

"Mr. Want published his opinion in the 'Medical and Physical Journal,' vol. xxxii., in 1814; and it was two or three years after that time, at the commencement of my apprenticeship, I was directed to prepare a preparation of colchium in rum (four ounces of the dried cormus to a pint). I was residing close to Covent Garden Market, and frequently had conversations on plants, &c., with the late Mr. Grimley, the herbalist, to whom I applied for the colchicum. Mr. Grimley inquired of me if I knew how it was that the use of this remedy was discovered by Mr. Want? He then related the

following circumstance:—Mr. Want had returned home from visiting patients, and met his wife on the stairs, and told her that her father had been seized with a violent attack of gout. The nursemaid, who was standing by, stated that she once lived with a little French gentleman, who prepared a secret remedy for the cure of gout, the Eau Medicinale; that he was accustomed to carry on his operations at the upper part of the house; and that there was a door on the staircase which he always kept locked, but that she had managed to obtain a little bit of one of the articles he made use of, and that she then had it by her locked up in her box. Mr. W. had not much difficulty in gaining a sight of this treasure. It was unknown to him, but he at once proceeded to Covent Garden Market, and applied to my informant, Mr. Grimley, to ascertain if he could recognise the portion of bulb. Mr. G. pronounced it to be the colchicum; and, to Mr. Want's further inquiry, informed him, that the only person who ever applied to them for it was a little Frenchman, and that he was accustomed to order from a cwt. to a cwt. and a half more than once in the season; that he adopted great precaution to prevent their obtaining a knowledge of what he did with it, and from whence he came; that he always made inquiry if they had it ready, paid the amount charged, then brought a porter, who carried it to a hackney-coach which he had in waiting, and which immediately drove off with its precious charge—for precious it was, only to be compared to a lump of the Californian or Australian mineral, as its preparation sold for its weight in gold (two drachms, twenty-two shillings). This relation, although occurring about three or four and thirty years ago, is quite fresh in my memory. I have related it to many, and about seven years ago I was in attendance on the late Earl Thanet, who suffered much from gout, and had a great objection to take colchicum. I happened to mention this little history, when he said, 'You are quite right.' I met that little Frenchman repeatedly years ago at the late Duke of Queensberry's, who was a martyr to gout, and to whom he used to administer the Eau Medicinale, he being the preparer of it. In the course of inquiry I have also found good reason to suppose that this little Frenchman was a well-known foreign perfumer, and has been dead upwards of twenty years, the founder of the house who now profess to be the proprietors of this once celebrated remedy.

"I have stated that it was in the thirty-second volume of the 'Medical and Physical Journal,' that Mr. Want first made public his discovery of the basis of the Eau Medicinale D'Husson, but I find on further reference that it was not in a medical,

but in a popular journal, the 'Monthly,' that he had previously announced it. I should take up too much of the time of the Society, if I entered into the controversies which took place at this period, with respect to the reliance which could be placed upon this beyond the numerous other drugs which had been as confidently declared to form its active ingredient, and it was the opinion of many that ere long it would be consigned to the tomb of the Capulets. I find, also, that a charge was made against Mr. Want, by an anonymous correspondent, that he had gained a knowledge of its basis by means somewhat similar to what I have now related, but which he denied, stating that he had obtained the first hint from Alexander, of Tralles, who recommended a remedy, 'Hermodactylon,' for the cure of gout, and with the effects of which the Colchicum autumnale entirely corresponded; and that this plant had entered into many gout remedies that had become obsolete. All I am now desirous to say on this subject, is, that the blue chamber being once penetrated, its mysteries might be readily compared with those which had preceded, but I believe the key was obtained in the manner I have related to the Society."

Having freely expressed our opinion of what we consider blemishes in Dr. Stillé's work, we would be far, indeed, from wishing to be understood as expressing unqualified disapprobation of it. Our opinion is, that it is a compilation, but, in many respects, a most admirable one, and one that, so far as its therapeutical department goes, will well repay a careful study.

The Causes and Treatment of Imperfect Digestion. By Arthur Leared, M.B., M.R.I.A. London: John Churchill, New Burlington-street. 1860.

A master-mind says that "Science in its most comprehensive sense means knowledge, and in its ordinary sense means knowledge reduced to system; that is, arranged in a regular order, so as to be conveniently taught, easily remembered, and readily applied." If this definition be kept in view, when we hear the profession of medicine taunted with uncertainty and want of scientific basis, we need but point for a triumphant reply to the many able and laborious observers in its ranks, who pursue their course for many years, steadily and silently accumulating knowledge in the form of facts, until a sufficient number may have been noted to render them valuable, when they give the benefit to their brethren by publication. Amongst such men

may rank the author of these present notes of the causes and treatment of imperfect digestion. The book, small in size and unpretending in style, contains a considerable amount of information in a condensed form, and, without entering with tedious minuteness into details, brings our knowledge in every department of an extensive subject down to the present time.

Dr. Leared generally employs plain language, and has a happy facility of expression, which conveys his meaning in a style lucid, and free from too many technicalities. Chapter I. contains a short view of the physiology of digestion, in which the several parts performed by the different organs concerned are simply stated, their importance contrasted, and some of the experiments, by which the exact nature of their individual functions have been ascertained, are set forth and commented upon. An effort, too, is made by the author to rescue one of the most important amongst them, the liver, from the obloquy so constantly cast upon it. "No organ," he says, "is so much maligned; pains and various ill effects are daily attributed to it, or to bile, as its responsible agent, of which both are guiltless."

In the second chapter, which treats especially of the causes of indigestion, all the more familiar are enumerated, whilst some, which are very much unsuspected by the generality of people, are elucidated and dwelt upon. Dr. Leared considers that perhaps there is too much of sameness in the diet of persons associated together, and that there might with advantage be a greater individuality in matters of eating and drinking. He also deprecates frequent changes of hours for meals, as likely to produce dyspepsia, and points out strongly the dangers of habits of repletion and partaking of food largely after exhaustion from long fasting. He adds, too,

> "That, when the general health is deteriorated from any cause, digestion is infallibly impaired; in many instances it is sought to prop up the one by overtaxing the powers of the other, and dyspepsia is often thus permanently added to the old disorder."

Of considerable importance, also, is the proper distribution of meals during the day. Their approximation is pernicious, for the stomach should have a season of rest, to complete its action upon the food previously taken; and injury is often done to invalids by the anxiety of friends to force nourishment upon them. It would be well also if medical men were to impress upon those whose destiny may lead them to reside in foreign lands, the advantage that would acrue to them and the dangers which they would escape by more or less adapting

their dietaries to the usages of the inhabitants of such climate as they may find themselves placed in.

The third chapter contains an enumeration of the chief symptoms of dyspepsia, whose name is indeed Legion; unfortunately, there is such a general familiarity with these symptoms, that few will fail to recognise the faithful portraits of some old acquaintance, and Dr. Leared's anatomical and physiological explanations of the greater number are clear and satisfactory. He has had many opportunities also of determining, by post-mortem examination, the dependence of many of them upon certain organic lesions: amongst others, that most distressing one of headach, which he constantly found associated with altered appearances in the duodenum. He dwells particularly upon the state of the skin, of the tongue, and of the throat of the dyspeptic, pointing out very clearly the indications afforded by careful examination of each, which should never be omitted. It does not escape him, either, to show how our diagnosis may be aided, and our treatment guided, occasionally, in obscure cases, by inspection and microscopic examination of matters vomited and of the several excretions.

Our author makes the division of dyspepsia into accidental and habitual; and this is a very correct view to take of the subject, for there are few who have not suffered, at some time or other, from this annoyance, and still they are not and would not wish to be considered confirmed dyspeptics, and all, even the most healthy, are liable to occasional digestive difficulties from various accidental causes. We quote, as a fair example of his style and powers of description, the following account of accidental dyspepsia from indulging in too great a variety; popularly it would be termed a bilious attack :

"A person partakes of a great variety of those dishes which luxury has made inseparable from a modern feast; soup, fish, rich ragouts, numerous sweetmeats, fruit fresh and dried, nuts, &c., and these are followed by an almost equal variety of drinks. The immediate effects may not be so marked as in the preceding kind of dyspepsia, but night brings retribution: a restless and feverish night is passed, or if sleep comes, it is feverish and fitful. Towards morning, the patient sleeps heavily through mere exhaustion, but wakens to begin the business or pleasure of the day, more fatigued than when he retired to bed. There is a foul taste in the mouth, and an unnatural sensation of heat causes a craving for cold water. Soda-water, from its coldness and sedative nature, is often substituted, and slight headach is felt; and constant eructations, the flavour of which is well compared by the patient to rotten eggs, give great annoyance. The headach, which is chiefly in front, is

worse on rising from bed, and is increased by stooping. Breakfast is almost untouched; his bowels are unmoved, and the pain and discomfort continue until dinner-time; then, if food can be taken, relief sometimes immediately follows. . . . But very often the symptoms are more severe; the headach is excessive, and described as 'splitting the head.' There are nausea and vomiting of foul-smelling, frothy masses, in which yesterday's dinner may be recognised. Severe, and at first ineffectual retchings ensue; and bile, almost pure, at last makes its appearance."

In treating of habitual indigestion, Dr. Leared makes several varieties—slow digestion; digestion with undue acidity; painful digestion; foul digestion; and imperfect digestion, with mental disturbance. The distinguishing symptoms of these several phases of the malady are pointed out clearly, and the peculiarities of each dwelt upon. Dr. Leared has adopted the method of illustrating each one of these varieties by a model or typical case, from his note-book—a method which brings what he would convey very familiarly before the mind's eye, and makes an impression upon the reader without wearying. No one can read these chapters without remarking the accuracy and truthfulness of the descriptions contained in them, and being struck with the extended opportunities which the author must have enjoyed for observation, and of which he has so fully availed himself. The pictures which he draws of the several kinds of dyspepsia are true to the originals as photographs, and assist materially in enabling one to recollect the distinctions between the different forms of the disorder.

The remaining sections of the book—those devoted to the very important subject of treatment—contain much useful information, but not a great deal that is novel to the practical physician, whose attention is so constantly directed to this subject, and who has so frequently to combat refractory and baffling symptoms. Dr. Leared makes a *resumé* of the several means of treatment usually adopted—dietetic, medicinal, and general, apportioning their due weight to each. Proper regimen and diet he shows to be, above all things, necessary; indeed, so essential is this matter, that he says "we must be despotic upon it;" but the difficulties experienced in this respect by every medical man have been encountered by him also. He says:—

"It is obvious that great judgment and due consideration are required in each individual case; and even when these have been fully exercised, the grand difficulty remains, of having our advice fully carried out. It is easier to have any amount of medicine

swallowed, no matter how nauseous, than to insure perseverance in a course of diet. Not only are good preliminary reasons necessary, but the patient becomes discontented, if the desired results do not immediately follow. But, while full co-operation with the medical adviser is necessary, much must be left to the discretion of the patient, since even in health no general rules apply; for, as I have elsewhere said, the requisite quantity of food varies with the period of life, constitution, and habits of the individual, as well as with other conditions. In quantity is also involved quality, as a much smaller amount of one kind of food will satisfy the appetite than another."

Dr. Leared is not dogmatic on the subject of early dining; he considers that habit to some extent, and position in society, should regulate this matter, at the same time giving the preference, when a choice is afforded, to early hours. But, as before mentioned, he considers the proper distribution of meals over the day as of the greatest importance. We know that the natural action of the human stomach is intermittent, and that the organ, when properly charged with aliment, should be allowed to dispose of its contents before any addition is made to them.

"We live," he says, "by what we digest, not by what we merely eat. An overplus of food is poison to the enfeebled stomach, because it prevents the digestion of even a moderate quantity.

"The diet generally suitable to the dyspeptic is that which combines most nutriment with least bulk. In a state of health, and especially when much exercise is taken, a certain bulkiness of food is necessary; but, in proportion to the degree of dyspepsia, concentrated nutriment answers best, the object being to nourish the body without oppressing the digestive organs."

Without entering deeply into the consideration of the properties of the various kinds of food, Dr. Leared glances at those most generally in use, pointing out their merits and demerits as articles of nutriment, and their bearing upon the prevention and treatment of dyspepsia. Hashes, stews, and rich-made dishes, are especially proscribed, and simplicity of diet is inculcated. Raw vegetables he does not look upon as very indigestible, and considers that the oil which is generally used with them is more to blame than they are. There is one fruit which he singles out for condemnation, because it is commonly regarded as harmless: that is, the pear, the eating of which he has known to greatly aggravate dyspepsia, for, even in their ripest state, pears contain an abundance of gritty material, which cannot be separated in the mouth. Bread, being an indispensable article of diet, should be of the very best qua-

lity, and should never be used by the dyspeptic unless, at least, two days old. In bad cases of acidity great advantage will be gained by substituting simple flour biscuit for bread. If there is one thing which disagrees more than another with all dyspeptics, it is pastry, with which may be classed sweetmeats of all kinds. The pernicious customs of smoking and snuff-taking are dealt with as might be expected by an enlightened physician and physiologist, and if the public would be advised in these matters by the author, the revenue derived from the "noxious weed" would soon experience a sensible diminution. The following extract regarding the use of water and alcoholic stimulants will explain the views which he entertains upon these matters:—

"In a large proportion of cases, water alone should be the habitual drink; its quality is therefore of great importance. The digestive organs of some persons are so susceptible of the impurities of this element, that they feel unwell if circumstances oblige them to drink water to which they are unaccustomed. Various earthy salts, especially sulphate of lime, are common impurities. There is considerable difference of opinion as to whether wine or other stimulants should be taken in dyspepsia, which I think has arisen from not sufficiently discriminating the various forms of the disease. The following is the sum of my own experience in this particular. A glass or two of good sherry is generally useful in simple, slow digestion; the contractions of the stomach are encouraged by the stimulant, whilst any tendency to fermentation is checked. In digestion with acidity, weak brandy and water is frequently appropriate, but it sometimes adds to the symptom in question. In painful digestion, stimulants are generally injurious, and in many cases a single glass of wine will severely aggravate an attack; but claret is least objectionable. In the painful affections of the empty stomach, stimulants are useful, and the patient has recourse to them intuitively. In foul digestion, stimulants are more likely to do harm than good, and especial care should be taken not to mix different kinds in the stomach. Malt drinks combine nutritive with stimulating properties, and are particularly useful in sustaining the strength between breakfast and a late dinner. A glass of good ale or porter, with a biscuit, often act as substitutes for substantial food, when the object is to avoid overloading the stomach. Care should, however, be taken, that the satisfying qualities of malt drink are not injudiciously allowed to take the place of stronger nourishment."

Dr. Leared does not forget to dwell upon the vast importance of attention to the skin—personal cleanliness and bathing; and the absolute necessity of abundant out-door exercise is also pointed out, of all descriptions of which the preference

is given, when it is practicable, to that on horseback; change of air and travelling also receive due consideration.

The treatment of dyspepsia and its various effects by medicine, receives its fair proportion of attention also. Dr. Leared speaks very highly of the beneficial effects of strychnia in certain forms of this disease, particularly in that attended with nervous debility.

"In that numerous class of cases in which abnormal sensations in various parts of the body, as the throat, the head, or the limbs, are experienced, it will generally be found useful. It is the best tonic for the class in which mental symptoms predominate, but it also possesses excellent local effects, and acts by increasing the tone of the muscular coats of the stomach and intestines. When these coats are relaxed, gases are generated, mainly owing to retardation of the aliment in the cavities. No remedy has in my hands proved so permanently effectual as strychnia against this inconvenience."

Dr. Leared's remarks upon the use and abuse of certain other remedies: mercury, bismuth, nitrate of silver, taraxacum, cod-liver oil, &c., are practical, and entitled to much consideration; of the merits of pepsin he entertains a very low opinion, having tried it in numerous cases without much effect, and the result of a series of experiments, which he instituted to test its powers of digesting animal matters, proved it almost inert. He concludes with some very sensible observations upon the use of purgatives and the treatment of habitual constipation, which are well worth perusal. On the whole, we can recommend this little work as a useful manual of the subject upon which it treats, and welcome it as an addition to our medical literature.

On Asthma: its Pathology and Treatment. By HENRY HYDE SALTER, M.D., F.R.S., &c. &c. London: Churchill. 1860. 8vo, pp. 372.

THE pages of some of our weekly contemporaries have occasionally, for some years past, been enriched by papers on asthma by Dr. Salter, from which it has been evident that he has been carefully studying the nature and treatment of this distressing complaint. The volume now before us contains the results of his labours, and presents an amount of information on the subject such as is not to be found elsewhere. We rejoice that Dr. Salter has recast his clinical facts, and the conclusions he has arrived at, in this more complete and accessi-

ble form, and without further preface we proceed to give our readers some account of the treatise. First, we must let the author describe the sufferings produced by the disease, and the objects he has aimed at in his work:—

"But not only is asthma not an uncommon disease, but it is one of the direst suffering; the horrors of the asthmatic paroxysm far exceed any acute bodily pain; the sense of impending suffocation, the agonizing struggle for the breath of life, are so terrible, that they cannot even be witnessed without sharing in the sufferer's distress. With a face expressive of the intensest anxiety, unable to move, speak, or even make signs, the chest distended and fixed, the head thrown back between the elevated shoulders, the muscles of respiration rigid and tightened like cords, and tugging and straining for every breath that is drawn, the surface pallid or livid, cold and sweating—such are the signs by which this dreadful suffering manifests itself. And, even in the intervals of health, the asthmatic's sufferings do not cease: he seems well, he goes about like his fellows, and among them, but he knows he is altogether different; he bears about his disease within him wherever he goes; he knows he is struck—*hæret lateri lethalis arundo;* he is conscious that he is not sound—he cannot be warranted; he is not certain of a day's, perhaps not of an hour's health; he only knows that a certain percentage of his future life must be dedicated to suffering; he cannot make an engagement except with a proviso, and from many of the occupations of life he is cut off; the recreations, the enjoyments, the indulgences of others, he dares not take; his usefulness is crippled, his life is marred; and, if he knows anything of the nature of his complaint, he knows that his sufferings may terminate in a closing scene worse only than the present.

"And not only is asthma thus comparatively common and superlatively distressing, but it is peculiarly and proverbially intractable. The asthmatic is generally looked upon as an asthmatic for life, as one who, though he should suffer many things of many physicians, would be nothing bettered, but rather grow worse, and the treatment is regarded as palliative. It must be admitted that the remedies for asthma are of very irregular and uncertain operation; that probably there is no single remedy that is not inoperative in a large number of cases; that that which is useful in one is valueless in another, while there are many cases that resist all remedies. If this intractability of asthma were doubtful, the large number of remedies that have been suggested would be a sufficient proof of it.

"But, besides this, asthma is a disease about whose pathology more various and discrepant ideas prevail than about any other disease that could be named, and to this day, if we appeal to the written opinions of living authors, its absolute nature must be considered as still *sub judice.*

"I think, then, I shall not be undertaking a useless task if I attempt to throw some light upon the pathology, and lay down some rules for the treatment of a disease so comparatively common, so distressing, so intractable, and so obscure."

Beside this description of the disease, which is drawn, we fear, from a passage in the preface, from personal experience, we venture to adduce another, also drawn by no feeble hand, from personal experience, written by one who was formerly under our own care, but who, in consequence of political offences, was imprisoned at Bermuda, whose climate is excessively unfriendly to asthmaties, and where, for upwards of two months, he was never free from the disease.

"Dec. 3rd.—Another red morning has dawned, and finds me sitting, bent down on my chair, with weary limbs and dizzy brain, worn out with another night's long agony. It is the twelfth night since my head has pressed my pillow—Almighty God !—is the angel Sleep to visit me never more? All night in darkness, I have wrestled with a strong fiend in this cell—other wrestling than Jacob's at Penuel—and now at sunrise, when I can breathe somewhat more freely, the sense of deadly weariness comes upon me heavily. My feet are cold as marble: my body and head bathed in sweat. I look at my image in the glass, and verily believe my mother would hardly know me: my eyes have the wild fearful stare that one may imagine in the eyes of a hard-hunted hare, couched and gasping in her form ; a cold dew stands in beads upon my forehead ; my cheeks are shrunk and livid; my fingers have become like bird's claws, 'and on mine eyelids is the shadow of death.'—The Asthma demon has fled westward, keeping within the great shadow of the world,—riding in darkness like Satan. Ah ! he will put a girdle round the earth, and be with me again at set of sun. —All tortured and weary wretches, all exiles and captives, long for the night ; and the ambrosial night brings them Lethean balm, and liberty, and home,—for those few blessed hours they may have back their youth, and tread their native land, and see the sweet eyes of those who love them.——And to me

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"But this, after all, is an unprofitable line of observation. If I once begin to write down my 'grievances,' I will but think the more of them. And I am resolved not to listen to myself on that topic. Moreover, if the night was bad, the morning is glorious, and is flooding the earth with heavenly splendour: —the heavy sighing of the wet sea-wind has sunk; and the waves that dismally tumbled and plashed all night against

the ship's side are now but a gentle ripple, trembling in the warm sun-shine. It is a deep calm.

"Slowly and painfully I prepared myself to go out; and have now basked in the sun for an hour on the pier. These December days (though the nights be cold) are as bright and warm as July days in Ireland. No wretchedness, on this side despair, could resist the soothing power of such a sky and scene, such Favonian airs and blue gentle seas. Strains of soft music from the band of the flagship in the bay come floating on the still air; and the cedar-tufted Bermoothes, with their white cottages and dark groves, are like a dream of Elysian tropic islands, where the Hesperian golden fruitage grows. Surely there is mercy in the Heavens; there is hope for mortal men. I am strong; I am well. Soul and body are refreshed; and I can meet again, and conquer again the demon that walketh in darkness."

Before developing his own views as to his pathology of the disease, Dr. Slater passes under examination several erroneous theories, that have more or less obscured the subject. Laennec, Copland, and Walshe have described a species of asthma under the names of nervous or hæmic asthma, as different from the spasmodic form; this affection—defined by Copland to be "anhelation from a feeling of want of a more complete respiration than the patient enjoys, the pulmonary expansion taking place with promptitude, completeness, and uniformity, so as to furnish a general puerile sound on auscultation"—Dr. Salter denies to be asthma, with which he says it has not one character in common. It is simply, he says, dyspnœa, depending probably on some peculiar state of the blood, as suggested by Dr. Walshe, and best seen in cases of narcotic poisoning, uremia, and anemia.

"In the hypothesis which he has thrown out to this effect, Dr. Walshe is probably quite correct, and it offers a rational solution of what, to my mind, was always a difficulty. I have often been puzzled at the panting dyspnœa of a chlorotic girl, not only on exertion, but when at rest, and have never before been able to give myself a satisfactory explanation of it. But, adopting Liebig's view of the part which the red globules play as the oxygen carriers, we see at once how anæmia would suspend the due oxygenation of the blood, inasmuch as it would directly diminish the agents concerned in that process; if there were half the blood globules, for example, half the oxygenation would go on, and we can easily understand how such arrears in the respiratory changes would give rise to instinctive respiratory efforts, with the object of re-establishing the balance. The dyspnœa of anæmia thus becomes at once intelligible, and fur-

nishes, in my opinion, a most interesting confirmation of the correctness of Liebig's views as to the relation of the red globule to blood-oxygenation. The fact is, the dyspnœa, in these cases of chlorosis, is as much an integral part of the diseased condition as any other symptom—the panting shortness of breath is as characteristic as the pallor of the complexion.

"If, then, this dyspnœa is no asthma at all, the free lung-expansion that characterizes it in no way invalidates the belief in the universal presence of bronchial stricture in true asthma."

The theory of Dr. Bree,—that the asthmatic paroxysm, and the excessive muscular action that attends it, are merely an extraordinary effort to get rid of some peccant and irritating matter pre-existing in the air tubes, for the discharge of which the asthmatic paroxysm is the means and mechanism—is shown to be quite untenable: the fact being, that the free expectoration with which the paroxysm ordinarily terminates is the result of the attack, and not its cause.

Other writers have asserted asthma to be but the dyspnœa of bronchitis, a theory already shown by Dr. Gairdner to be incompatible with the clinical history of the disease, as is also the theory of Dr. Budd—that it is but the dyspnœa of emphysema or heart disease. Nor does the suggestion, that the paroxysm depends on paralysis of the bronchial muscles, meet with much more favour at our author's hands. Dr. Todd's supposition, that asthma depends on a morbid state of the blood, analogous to that which he believes to exist in gout or epilepsy, is regarded as nearly as foundationless as the others, though in certain cases it is admitted that there is reason to attribute the paroxysm to a morbid condition of the circulating fluid.

Having thus cleared the ground, our author lays down the following propositions, as containing the true pathology of the disease:—

"1. That asthma is essentially, and, with perhaps the exception of a single class of cases, exclusively, a nervous disease: that the nervous system is the seat of the essential pathological condition.

"2. That the phenomena of asthma—the distressing sensation and the demand for extraordinary respiratory efforts—immediately depend upon a spastic contraction of the fibre-cells of organic or unstriped muscle, which minute anatomy has demonstrated to exist in the bronchial tubes.

"3. That these phenomena are those of excito-motory or reflex action.

"4. That the extent to which the nervous system is involved

differs very much in different cases, being in some cases restricted to the nervous system of the air-passages themselves.

"5. That in a large number of cases the pneumogastric nerve, both in its gastric and pulmonary portions, is the seat of the disease.

"6. That there is a large class of cases in which the nervous circuit between the source of irritation and the seat of the resulting muscular phenomena involves other portions of the nervous system besides the pneumogastric.

"7. That there are other cases in which the source of irritation, giving rise to the asthmatic paroxysm, appears to be central—in the brain; consequently, in which the action, though excito-motory, is not reflex.

"8. That there is yet a class of cases in which the exciting cause of the paroxysms appears to be essentially humoral."

These propositions are next examined in detail. That asthma is a nervous disease, is shown, our author argues—1st. By its causes, which are such as give rise to other diseases acknowledged on all hands to be nervous, such as fatigue and physical exhaustion, sudden or violent mental emotion, or causes that can affect the lungs only through the intervention of the nervous system, as gastric irritation, &c. 2nd. By its remedies, which are such as appeal to the nervous system, as antispasmodics, sedatives, direct nervous depressants, tobacco for example, stramonium, antimony, chloroform, and mental emotion. 3rd. By the periodicity of the disease; and, 4th By its associated and precursory symptoms,—as the quantity of limpid water passed in the early part of the paroxysm, white as pump water, like the nervous water passed in the students' "funking room," or like the urine of hysteria, or that of nervous headach; or as the neuralgia, drowsiness, and languor, or peculiar animation or hilarity of the previous day. 5th. Another circumtance in favour of the disease being essentially nervous, is the possible absence of appreciable organic change, as shown by post-mortem examination; and lastly, it is argued that the fact of the phenomena being muscular is almost proof positive that the nervous system is the seat of the primary derangement, this being a law with but few exceptions.

The second proposition, *that the phenomena of asthma,—the distressing sensation—and the demand for extraordinary respiratory effects,—immediately depend upon a spastic contraction of the fibre cells of organic muscle, which minute anatomy has demonstrated to exist in the bronchial tubes*—may, our author thinks, be almost assumed, but he thinks it well to prove it, for the sake of precise pathological views, as well as because it is a necessary stepping-stone to the succeeding propositions. He says:—

"It will certainly be an advantage if it can be shown beyond cavil that spasmodic stricture of the bronchial tubes is the only possible cause of asthma, that it is adequate to the production of all the phenomena, that it is a form of perverted physiology that may exist pure and uncomplicated with any organic disease, and that the view that would assign it as the sole essential condition in asthma is—what all pathological views should be—physiological and rational. I think, perhaps, the eliminative or exhaustive method of proof will be as good as any."

This doctrine, which our own observations, as well as the facts collected by the author, lead us to believe to be, by far, too limited and restricted, he attempts to prove by the eliminative or exhaustive method. The sole constituent symptom of the disease is, he argues, *dyspnœa*—dyspnœa of a peculiar kind,—sudden in its access, intense and agonizing, following a state of perfect apparent health and ease, and relapsing as suddenly, perhaps speedily, and, it may be, without any expectoration, into ease and tranquillity again.

These phenomena do not, it has been proved, depend on heart disease, bronchitis, or emphysema; as these may be completely absent; and moreover, the dyspnœa of asthma is widely different from that which they produce.

"But the dyspnœa of asthma tells a plainer tale than this; it tells us not only what it is not, but what it is. It gives the most positive evidence of the narrowing of the air-passages. The asthmatic's breathing is what our forefathers called 'strait,' what we call 'tight;' he feels as if a weight were on his sternum, as if his chest were compressed, as if a cord bound him, as if it would be the greatest relief to him if some one would cut his breast open and allow it to expand; he rushes to the window to get air, he cannot tolerate people or curtains about him, his clothes are loosened, and all the muscles of respiration tug and strain their utmost to fill his chest. But he can neither get air in nor out, he can neither inspire nor expire—his respiration is almost at a dead lock; he cannot blow his nose, can hardly cough or sneeze, cannot smoke a pipe, and if his fire is failing, cannot blow it up; he has hardly air enough to produce the laryngeal vibrations of speech. The chest is distended, indeed, to its greatest possible limit, the cavity of the thorax is enlarged both in the costal and diaphragmatic directions; the costal distention is shown by the fact, that the clothes that ordinarily fit will not meet over the chest by from one to two inches, while the descent of the diaphragm is shown by the increased girth of the abdomen and by the heart being drawn down to the scrobiculus, where it is seen beating plainly; such are the violent instinctive efforts of the respiratory muscles to overcome the obstruction to the access of air. But they are unavailing; the air that is without

cannot get in, and that which is within is locked up. In spite of the violent muscular effort, there is hardly any respiratory movement, the parietes of the chest cannot follow the action of the muscles; on listening to the chest the respiratory murmur is inaudible, even when not drowned by the wheezing; respiration is almost *nil.* Where, then, can this obstruction to the introduction and exit of air be? It must be in some part of the air-passages—the larynx, trachea, or bronchial tubes. In the larynx and trachea we know, from the symptoms, it is not. The fact of bronchial stricture, then, is certain."

In discussing the third proposition, *that the phenomena of asthma are those of excito-motory or reflex action*, Dr. Salter overlooks or denies the power of muscle to respond to direct stimulation, and states that the contraction, consequent on direct stimulation is due to the stimulus being conveyed to minute ganglia scattered through its substance, it may be microscopic, and reflected to the muscular fibres,—a theory with which we cannot accord, but which it is not necessary to discuss at present. In this way he accounts for the operation of the effluvium of ipecacuanha, hay, &c. Impressions applied to parts more remote exert their influence through other portions of the nervous system. He divides these into three groups, as in gastric cases, where the irritation is applied to the pneumogastric nerves, and reflected from the medulla oblongata through the pulmonary branches of the same nerves. In other cases, he says, it is the organic nerve is concerned, as where the fit is produced by a loaded rectum; and in a third class, he says, the cerebro-spinal system is the recipient of the irritation, as in a remarkable case where the application of cold to the instep immediately produced the asthmatic condition. A more correct physiology would embrace all of these in one group, and refer them to the spinal axis.

The illustrations of the seventh proposition are so interesting and important that we must give then in full, remarking that Graves, in his Clinical Medicine, mentions a case analogous to the first of those here mentioned, but, if possible, illustrating more strongly the point referred to.

"But there is yet again another class of cases that have suggested to my mind the belief that asthma is sometimes *central*, not reflex, in its origin; that it may originate in irritation of the brain itself, or the spinal cord. The two following cases appear to me to be examples of this kind of '*central*' asthma. The first was communicated to me by my brother, Mr. James Salter, and occurred under his own observation. The patient was a boy of about ten years old, and the disease acute hydrocephalus, which ran a fatal

course in about a fortnight. Five days before his death he was suddenly seized with an attack of dyspnœa of the asthmate kind; it was very severe, lasted about half an hour, and then entirely vanished. The following day he was seized with a precisely similar attack; but this was the last; the symptoms never re-appeared, and the patient sank in the ordinary way, from the brain disease, about four days afterwards. He had never before suffered from asthma; there were no chest symptoms either before or after the attacks—no cough, no expectoration. My brother is very precise as to the nature of the dyspnœa; he says there was nothing cardiac about it—no panting, no orthopnœa—but that it had the labouring 'difficult' character of asthma. I conceive that in this case the bronchial spasm was a phenomenon of deranged innervation from central irritation, analogous to the jactitations, rigidity, and convulsions characteristic of hydrocephalus.

"The other case was that of a man of about fifty years of age, subject to epilepsy. His fits had certain well-known premonitory symptoms, and occurred with tolerable regularity, I think about once a fortnight. On one occasion his medical attendant was sent for in haste, and found him suffering from violent asthma; the account given by his friends was, that at the usual time at which he had expected the fit he had experienced the accustomed premonitory symptoms, but instead of their being followed, as usual, by the convulsions, this violent dyspnœa had come on. Within a few hours the dyspnœa went off and left him as well as usual. At the expiration of the accustomed interval after this attack the ordinary premonitory symptoms and the usual epileptic fit occurred. On several occasions (I do not know how many) this was repeated, the epileptic seizure being, as it were, supplanted by the asthmatic. Of these four points, my informant, who was the medical attendant, seemed certain;—that there was nothing amiss with the lungs either before or after the attacks, that the character of the dyspnœa was asthmatic, that each attack of asthma occurred at the usual epileptic period, and that they were preceded by the premonitory symptoms that ordinarily ushered in the epilepsy. I think that such a case admits of only one interpretation—that the particular state of the nervous centres that ordinarily threw the patient at certain periods into the epileptic condition, on certain other occasions, from some unknown cause, gave rise to bronchial spasm; that the essential diseased condition was one and the same, but that its manifestations were altered, temporary exaltation and perversion of the innervation of the lungs supplanting unconsciousness and clonic convulsion. Bearing in mind the many points in their clinical history that asthma and epilepsy have in common, this case is one of peculiar interest.

"To this same category of *central* asthma we must, in strictness, assign those cases in which the paroxysm is brought on by violent emotion, as in that remarkable instance I have related of the gentleman who had, on two distinct occasions, violent spasmodic asthma suddenly induced by alarm, from the fear that he had poisoned his

wife. In such a case, the seat to which the stimulus is primarily applied is the brain itself."

The eighth proposition refers to cases where the paroxysm is produced by particular materials mingled with the blood, and therefore so far humoral. The instances adduced of this are where the fit occurs after certain substances have been taken into the stomach, and a sufficient interval has elapsed to allow of their being digested and absorbed into the blood, their effect being produced, the author says, by their passage through the bloodvessels of the lungs, where they cause an irritation of the nerves of the lungs, which is conveyed to the nerve centres, and reflected thence to the muscles, causing their spasm. Why their action is not at once attributed to the influence of the centres, we can scarcely imagine.

We have now developed pretty fully the author's views of the nature of asthma; and, on the whole, we think he has just missed the true explanation of the phenomena, owing to his attributing the dyspnœa exclusively to the spasm of the bronchial muscles, and a consequent impossibility of drawing a sufficient quantity of air into the lungs.

The clinical observations recorded by himself disprove this theory. He has shown that during the paroxysm the chest is resonant all over on percussion—that it is distended to the fullest extent—its circumference increased by at least two inches—the intercostal spaces widened—and the diaphragm pulled down to the furthest limit.

Now if the ingress of the air were impeded, this state of the thoracic walls could not be produced by any amount of muscular action. We know that the cartilages of the ribs yield, and the peculiar state called "pigeon breast" is produced, under such circumstances, but the chest is not expanded.

A careful examination of all the phenomena proves, that the paroxysm of asthma is caused by a state of spasm—tonic or tetanic spasm—of all the muscles of inspiration, under which head we include the bronchial muscles, whereby the cavity of the thorax is expanded to the greatest possible degree, and the lungs are kept filled with air, the stagnation of which in the lungs causes the state of asphyxia so characteristic of the disease. This state of the muscles is well described by Dr. Salter in the following passage:—

"On stripping an asthmatic in the height of a paroxysm, an admirable example is seen of the immense array of muscles that become, on an emergency, accessory to respiration, and some idea is formed of the toil of the asthmatic, and the extremity of those suffer-

ings that necessitate for their relief such intense labour. All the muscles passing from the head to the shoulders, clavicles, and ribs are rigid, and the head is rendered a fixed point from which they can act on their respiratory attachments. Ordinarily these muscles, such as the splenii and scaleni, have their inferior attachment fixed, and move the head and neck; but now their upper attachment is fixed, and from it they act as mediate or immediate elevators of the ribs and distenders of the thoracic cavity; and this is how it is that the asthmatic is incapable of moving his head. By the contraction of the *trapezius* and *levator anguli scapulæ*, the shoulders are raised to the ears, in order that the muscles proceeding from the shoulders to the ribs may act at an advantage as elevators of these latter. The muscles of the back are so engaged in respiration that they cease to support the trunk, and the gait becomes stooping. At every inspiration the *sterno-mastoids* start out like cords, and produce by their sudden prominence a deep pit between their sternal attachments. I have already referred to the gaping descent of the lower jaw at each inspiration. . . . . .

"Meantime all the muscles that increase the capacity of the chest are straining their utmost and starting into prominence at each inspiration; as each breath is drawn, every muscle is thrown out into bold relief, and since there are hardly any muscles of the trunk that are not mediately or immediately respiratory, the whole muscular system of the trunk may be mapped out in every part of its detail. The straining muscles are rendered all the more conspicuous from asthmatics being generally so thin."

Nor are the other phenomena less characteristic. The respiratory movements are unfrequent, not more than nine or ten in the minute; the relative length of inspiration and expiration is reversed—instead of the inspiration being longer than the expiration, as is normally the case, the expiration is longer than the inspiration, four or five times as long. This difficulty of expiration is well and truly described by the author, though he has missed the explanation of it:—

"In the most intense asthmatic breathing the difficulty of getting the air out of the chest is so great, the expiratory movement (with all its effort) so slight, and the quantity of air expelled so small, that, as if aware that the chest would never be emptied at that rate in time for the next respiration, a violent involuntary effort comes to the assistance of the expiration, and pumps out the remainder of the air with a sudden jerk. This termination of a prolonged, ineffectual, and almost motionless expiration by a sudden expiratory jerk is characteristic of the intensest asthma, and occurs in no other form of dyspnœa whatever; whenever we see it we may be sure that the bronchial spasm is extreme. It is at expiration, too, that the asthmatic experiences the greatest distress."

In one of the narrative cases (Case VI.), constituting the appendix to the book, this state is fully detailed. In the patient who narrates his own case, we recognise a dear and intimate friend of our own, one beside whom the present writer has often sat when he was labouring under one of his fits—a man of rare intelligence, well able to analyze his sensations; and all the more so, from his having himself studied medicine in early life —and one by whom our attention was early drawn to this fact[a].

"The balance seemed quite destroyed between *inspiring* and *expiring*. In spite of myself I was forced to keep tugging *in* the air with all the muscles and joints of my body, while it seemed as if it hardly went *out* again at all. A *cough*, as an expiration, was a relief, but a relief that seldom came in those fits till near the end.

"Besides the peculiar asthmatic sound of respiration, I used to accompany almost every tug for breath with a sort of groan, which (I imagine) helped me like the *hech* of the axe-man, or served, as it best might, in place of an expiration proper."

It seems sufficiently plain that the muscles of inspiration are, during the fit, in a constant state of tonic contraction, and that the great difficulty is to empty the chest so as to allow of its being refilled with fresh air;—for this purpose the muscles of expiration are constantly contending with those of inspiration, and require the aid of a strong voluntary effort to overcome them. It appears, moreover, that as soon as the volition is suspended, the inspiratory muscles immediately regain the victory —the chest is again distended—"the moment the expiration is completed, the inspiration begins—there is no pause—the normal post-expiratory rest is lost."

The function of the bronchial muscles has long been a subject of discussion: that they are not active agents in expiration, as was at one time thought, may be easily proved, and is now agreed on. The author thinks that they are of use for emptying the minuter tubes of mucus, partly, perhaps, by a peristaltic movement, and partly by narrowing the tubes where necessary, so as to add force to the explosion of coughing. They also, he believes, serve to exclude noxious matters from getting into

[a] In Vol. xiii. of our First Series will be found a very valuable paper, entitled, "The Journal of an Asthmatic," which was contributed at the request of Dr. Stokes, by this same gentleman. In it attention is drawn to this want of expiration. "In these dreams," he says, "I wanted the power of *expiration*." He was cured of his asthma by a voyage to Van Dieman's Land, and residence there. It is a remarkable coincidence that a lady who now resides in the house where the disease manifested itself in him, and where he suffered almost constantly from it, has become liable to it, though free from it before living there.

the air-cells, and regulate the quantity of air distributed to the several portions of the lung. That they may take part in these several actions, is possible; but these are merely secondary actions. That they produce a general narrowing of the bronchial tubes during expiration, as he further suggests, we cannot believe. Of the several suggestions that have been made as to their proper function, we consider that which classes them as muscles of inspiration accords with the greatest number of facts. It is to be remembered that the tubes are but ducts, not the essential part of the organs of respiration; that, during inspiration, it is important that the air-vesicles should have room to expand as much as possible, and that the tendency to vacuum in the thoracic cavity should be as great as possible. This is accomplished chiefly by the expansion of the thoracic cavity, but at the same time the bronchial tubes are narrowed and compressed by the contraction of their muscles, so as allow the air-vesicles the utmost room to expand. It is to be remembered that these muscles have not been demonstrated on the minutest tubes, or surrounding the vesicles, and that Kölliker's statement, that they probably exist in these parts, is merely speculative.

The well-known fact that in health the sound of inspiration is about five times longer than that of expiration—Fournet estimates the sounds as 10 to 2—can easily be explained on this supposition: during inspiration the tubes are narrowed, and the air is long in passing through them; during expiration the muscles are relaxed, and the tubes dilated, allowing the air to pass through them in a larger volume, and more quickly, and hence the short sound of expiration. Thus, these muscles are proved to be muscles of inspiration. In asthma they, like all other muscles of inspiration, are in a state of persistent contraction, and hence the prolonged expiratory murmur, in this case, longer than that of inspiration, because of the difficulty with which the inspiratory muscles are overcome, and the slowness with which the air is expelled.

The almost total absence of vesicular murmur in asthma indicates the stagnation of air in the pulmonary vesicles. It is stated by Laennec and Williams that the murmur may be restored by making a forced and prolonged expiration, and then inspiring quietly; but the author states that the dyspnœa is increased by expiring, and relieved by inspiring, and considers his experience to be thus at variance with that of Laennec and Williams; possibly the two statements may be reconciled. Without special observations we cannot undertake to pronounce on the question; but we have no doubt the vesicular

murmur may be restored by the method mentioned by Laennec and Williams, and this fact we look on as corroborative of our own view of the pathology of the disease.

In concluding his chapter on the pathology of the disease, Dr. Salter sums up his remarks as follows:—

"In what, then, does the peculiarity of the asthmatic essentially consist? Manifestly, in a morbid proclivity of the musculo-nervous system of his bronchial tubes to be thrown into a state of activity; the stimulus may be either immediately or remotely applied, but in either case would not normally be attended by any such result. There is no peculiarity in the stimulus, the air breathed is the same to the asthmatic and the non-asthmatic, the ipecacuan powder, the hay-effluvium, is the same in both; nor, probably, is there any peculiarity in the irritability of the bronchial muscle; the peculiarity is confined to the link that connects these two—the nervous system, and consists in its perverted sensibility, in its receiving and transmitting on to the muscle, as a stimulus to contraction, that of which it should take no cognizance. In those cases where the spasm is produced by some irritant applied to the air-passages themselves, this perverted irritability is confined to the bronchial nervous system. The exact seat of the perverted nervous action in those other cases where the stimulus is remote, is more doubtful. Take, for instance, that case in which cold water thrown on the instep immediately produced asthmatic dyspnœa. Was the cerebro-spinal nervous system in fault here? Did it transmit to the nerves of the lungs a morbid stimulation, or was the fault, as in the other cases, confined to the pulmonary nervous system—to its being morbidly affected by a nervous impression perfectly normal? These are questions that in the present state of our knowledge it would be difficult or impossible to answer. At any rate, it is clear that the vice in asthma consists, not in the production of any special irritant, but in the irritability of the part irritated."

We think he might have spoken more definitely, had it not been for his attributing the disease too exclusively to the contraction of the bronchial muscles. In the slight and transient attacks of asthma produced by the inhalation of irritating gases, or effluvia, the disease arises very probably from the spasmodic contraction of the bronchial muscles alone, caused either by the direct irritation of the muscular fibres, or through the medium of nerves and microscopic ganglia. The fully developed attacks we have no hesitation in referring to the cerebro-spinal nervous system. If we accepted the teaching of Schrœder Van der Kolk and Schiff, we might localize the diseased action in the medulla oblongata and lateral columns of the spinal cord, but in our review of Van der Kolk's work we have shown reasons for not accepting his teachings on this

point. He has, however, established the fact, that muscles that are associated in action are supplied by nerves arising from special groups of mutually connected ganglionic corpuscles, from which it follows that irritation of this group of cells will throw the entire group of muscles into action. Van der Kolk has also shown that, "while the motor branches of spinal nerves are distributed to muscles, the sensitive branches of those nerves are distributed to the skin covering the parts moved by those muscles."

By the aid of this law we advance a step further in locating the seat of irritation in the nervous centres. Dr. Salter has found that itching under the chin, over the sternum, and between the shoulders, is a frequent, perhaps constant, premonitory symptom of the attack. This is evidently a subjective sensation; it arises from some irritation in the nerve centres, which is, as usual, referred by the mind to the extremities of the nerves; and as these are distributed to the skin covering the parts moved by the muscles of inspiration, we infer that there is an irritation at the roots of the nerves by which these muscles are supplied:—

"One curious symptom of asthma, which I have found present in a large number of cases (I am not sure it is not universally present), but which I have never seen noticed in any treatise on the subject, is *itching under the chin.* I have often known that the breathing of asthmatics was tight, and told them so, from seeing them scratching and rubbing their chins. The itching is incessant, and of an indefinite, creeping character; but although it is impossible to help scratching it, the scratching does not relieve it. It is often accompanied with the same itching sensation over the sternum and between the shoulders, especially between the shoulders. It appears the moment the first tightness of breathing is felt, and goes off when the paroxysm has become confirmed—indeed, I think it is more pronounced in those slight and transitory tightenings of the breathing to which asthmatics are so liable (as, for example, after laughing), than in regular attacks. But I think it is the most strongly marked of all in the asthma that accompanies hay-fever. The sternal and interscapular portion of this itching is, I think, of easy explanation, its distribution to the chin is less easy to understand. According to the law that the pain arising from the irritation of a viscus shall be referred to the superficies, front and back, in the middle line, and at a level with the viscus (a law illustrated by the seat of the pain in stomach, bowel, and uterine disease), the seat to which the sensation from bronchial irritation is referred is the sternum and between the blade-bones. Thus, in bronchitis, the raw, scraping feeling that accompanies cough is sternal and interscapular; so that in relation to this asthmatic itching the fact would

appear to be simply this—that while the impression on the bronchial nervous system produced by inflammation of its mucous membrane gives rise to sternal and interscapular *pain*, that produced by spasm of these tubes gives rise to sternal and interscapular *itching*. The itching of the chin must, I think, be of the same reflex character, and admit of the same explanation, but the reason of its locality is less apparent."

This morbid irritability existing in the nerve centre will be called into action by stimuli strictly normal in character; hence it is that cold applied to the instep, a loaded rectum, or an indigestible meal, will excite an attack of asthma; and we can easily understand that the presence of certain matters in the blood, circulating through the nerve centres, will have a similar effect.

In many respects there is a close analogy between epilepsy and asthma. Van der Kolk has shown that in epilepsy there is a morbid irritability of the medulla oblongata, and the circumstance that this irritability affects the muscles of the trunk and extremities—while in asthma the muscles of the trunk only are affected—lends some probability to the theory of Schiff, that while the anterior columns of the spinal cord preside over the motions of the extremities, the lateral columns govern those of the trunk only; and, if other circumstances permitted, might induce us to localize the irritation of asthma in these lateral columns, and the portion of the medulla oblongata connected therewith.

The case already quoted from Dr. Salter—in which asthmatic paroxysms took the place of, and became substitutes for, epileptic paroxysms—forcibly indicates the analogy between the two diseases; and the fact that the asthmatic paroxysm, like the other, serves by its explosion to relieve the system for a time, bears in the same direction. We may observe that, in epilepsy, it is chiefly the muscles of expiration that are affected, instead of those of inspiration, as in asthma; and the spasms of the muscles in epilepsy are at first of the same *tonic* character as in asthma, though they soon assume the *clonic* form.

The chapters of this book on the treatment of asthma are of extreme value, and are the fullest and most complete that we are acquainted with. The treatment resolves itself into that of the paroxysm and that required during the intervals; and although the last is the real treatment of the disease, while the treatment of the paroxysm is merely the treatment of a symptom, yet the paroxysm being, in asthma, potentially, though not essentially the disease (for it is its sole manifestation, the only source of suffering, and the cause of those orga-

nic changes in the heart and lungs by which alone asthma threatens life), its treatment, our author very justly remarks, holds the first place in the therapeutics of the affection. If the paroxysms are mitigated, the disease is rendered proportionately trifling—if they are prevented, the disease is extinguished.

"The first thing to be done on being called to a patient in a paroxysm of asthma, is to ascertain if there is any exciting cause actually present and in operation, and if so to remove it. An undigested meal or a full rectum may, as peripheral irritants, produce bronchial spasm; the one I think through the pneumogastric nerve, the other through the sympathetic, and thus an emetic which relieves the one, and an enema (or any other means) which evacuates the other, may put a stop to the attack. I have previously mentioned a case in which the occurrence of an attack was entirely determined by the loaded or empty condition of the rectum: if the patient retired to bed without the bowels being relieved, he was sure to be awoke in the night with asthma; if they were moved before going to bed, he awoke at the usual time in the morning well. The relief obtained by an emetic is well known.

"At once ascertain, then, the condition of the patient in these respects, inquire what he last ate, and when he ate it, and if his bowels are loaded; and if there is any source of offence in either situation—stomach or lower bowel—secure its immediate evacuation. Ascertain, too, the state of the air he is breathing, if there is in it any known or unknown irritant, any of those subtle emanations of which asthmatics are so sensible, if there is a hay-field near, or ipecacuanha powder in the room, or dust, or smoke, and if so, let the removal from these influences be the first step taken. Inquire, too, if the patient has ever been seized with an attack in the same place before, if he has had any reason to imagine that that particular air did not agree with him, or if in any local peculiarities it resembles places that he has previously found offend his asthma. If so, get him away at once, never mind how difficult it is to move him, transport him to some place or some *kind* of situation known to agree with him; very likely before he has gone a mile or two he will be quite well; whereas, all treatment will be powerless as long as he is under the influence of the injurious air.

"Let it be your first care, too, to place your patient in a favourable position;—get him out of bed and bolster him up in an arm-chair, and place before him a table of convenient height, with a pillow on it, on which he may rest his elbows, and throw himself forward. It is quite surprising, almost incredible, how much comfort this will give, and not only so, but how it will actually relieve the breathing and dispose the spasm to yield. Sometimes the patient's breath is so bad that he cannot sit; the same arrangements must then be made for him in a standing posture.

"But if, as will probably be the case, the spasm persist in spite

of these preliminary measures, and if no exciting cause can be discovered, by whose removal the paroxysm may be at once arrested, our next step is to cast about for some remedy by which we may hope to cut it short. In our choice of this we shall be very much influenced by our patient's former experience. Few asthmatics suffer long from their disease without having discovered what particular remedy is most efficacious in their case, and in this respect different cases of asthma vary so much, and display such a caprice, that I really know of no other guide except the patient's experience."

The class of remedies that Dr. Salter has found most benefit from in the paroxysms are depressants, or contra-stimulants, a class that exercises, he says, the most singular and powerful effect over the asthmatic condition, greater and more immediate than any other he knows, except, perhaps, mental emotion. The drugs of this class with which he is most familiar are ipecacuanha, tobacco, tartar-emetic. He believes their *modus operandi* to be neither as emetics nor expectorants, but as direct depressants, relaxing the spasm of the bronchial tubes. Of the three drugs, he regards ipecacuanha as the most manageable, and as entailing the least suffering.

Tobacco is the most speedy and effectual; tartar-emetic resembles tobacco in its action, but the nausea and collapse it produces are long and tedious. Remedies of this kind, given with a view to cutting short the paroxysm, should be given as early as possible, and for two reasons,—first, because it is much easier to break through the paroxysm when it is but just established. The other reason is, that if the spasm *does* yield in spite of having been some time established, the recovery is not so complete as if the remedy had been applied immediately on its appearance.

"It is a difficult thing for the asthmatic, I know, overwhelmed with sleep as he is, and generally with a peculiarly heavy drowsiness upon him, to leave his bed or light and smoke his pipe; but he *must* do it; he must rouse himself fairly up, and adopt at once those remedies that in his particular case are most efficacious. In fact, the treatment of the asthmatic paroxysm should be so prompt as to be almost rather preventive than curative: in the treatment of no disease is the injunction '*obsta principiis*' of more vital importance.

"One is sometimes asked—Which is the best form of tobacco to use, a cigar or a pipe? I think a pipe has the advantage of more certain strength; cigars vary so much, even the same sort. The tobacco that I generally employ is bird's-eye, as being a mild tobacco, and one by which you run little risk of inducing alarming collapse. *Shag*, or any other of the strong tobaccos, should not be used by the uninitiated, as the collapse they produce is apt to become protracted

and unmanageable. For ladies and young children, a few whiffs of a mild cigarette are quite sufficient.

"Of ipecacuanha, I think the powder is better than the wine. I never give a very small dose, it is uncertain and teasing. I would say, always give such a dose as will be certain to secure its own prompt rejection. I never give less than twenty grains, however young the patient may be; it never does harm.

"But ipecacuanha is a nauseous thing, and to those who have frequently taken it as an emetic, it becomes almost intolerable. I have lately discovered that it may be taken very pleasantly and very efficaciously in the form of some strong ipecacuanha lozenges made by Messrs. Corbyn, of 300, Holborn. They are about four times the strength of ordinary ipecacuanha lozenges; three of them will produce prompt vomiting. They are very convenient, too, for keeping up a slight nausea; and for children they are invaluable. If vomiting is desired, they should be bitten and ground up in the mouth and swallowed at once.

"There is one circumstance that greatly detracts from the utility of tobacco in the treatment of asthma, that practically indeed almost destroys it. Our adult male population have so habituated themselves to its use, that they have lost the susceptibility to its full influence, and cannot induce complete collapse by any amount of smoking. Now adult males constitute by far the majority of the subjects of spasmodic asthma; and thus the habit of smoking has rendered powerless, in a large number of cases, what I think may, without any qualification, be called its most potent remedy.

"To the practical I need not apologise for these trifling hints, of which I know they will recognise the value."

Coffee is one of the commonest and best reputed remedies for asthma, acting, our author believes, by its *agrypnic* properties. He gives the following hints with regard to its administration:—

"1. It cannot be given too strong. Unless sufficiently strong to produce its characteristic physiological effects, it does no good, but rather harm; moreover, if given very strong, it need not be given in much bulk, and quantity is a disadvantage—its effect is less rapid, and it oppressively distends the stomach.

"2. I think it is best given without sugar and milk—pure *café noir*.

"3. It should be given on an empty stomach; if given on a full stomach, it often does great harm, by putting a stop to the process of digestion: indeed, so much is this the case, that I consider coffee accompanying a meal, especially late in the day, so peculiarly apt to induce asthma, that it deserves to be classed among its special provocatives. I have mentioned elsewhere, the case of an individual who never dared to take the usual after-dinner cup of coffee—it would make the simplest dinner disagree with him. But the same

asthmatic found in strong coffee, on an *empty stomach*, one of his most valuable remedies.

"4. For some reason or other, I do not know why, it seems to act better if given hot—very hot."

Chapter X. is devoted to the "Treatment of the asthmatic paroxysm by sedatives." The principal remedies of this class are, first, tobacco in sedative doses, which is very efficacious, but liable to produce collapse; second, chloroform, one of the most powerful and speediest remedies, and worthy, perhaps, of the first place of all; third, opium, which Dr. Salter does not commend; fourth, stramonium; fifth, lobelia; sixth, Indian hemp—all of which are uncertain, and their preparations variable in strength; seventh, ether, which he has seen do good in but one case, though he has given it in scores, and in many it produces a disagreeable oppression, and even increases the spasm.

Chapter XI. is on the treatment of the paroxysm by the inhalation of the fumes of burning nitre paper. This is a remedy that we have been in the habit of prescribing for many years, and always in cases of *pure* asthma with the greatest benefit; even where there is bronchitis present the relief derived from its use we have often found very considerable, though Dr. Salter does not seem to have found it so. He gives many cases illustrating its use, and the following hints for its application:—

"Let me, in conclusion, give a few practical hints with regard to the making of the nitre-paper. And this is not an unimportant point, for patients will find it more convenient to prepare the paper themselves, and unless it is properly made, it will not produce its beneficial results. The object is to have as much deflagration of nitre and as little combustion of paper as possible. For that purpose the paper must not be very thin, or it will not take up sufficient nitre; nor very thick, or it will make the fumes too carbonaceous; but it must be moderately thick, and very porous and loose in its texture, so as to imbibe a sufficiency of the solution. The strength of the solution should be saturate at the ordinary temperature. If a saturate solution is made with warm water, and the paper is very bibulous, it becomes too much impregnated with nitre—too strong a paper, and burns too fast, with a sudden explosive flame. There should be no brown smoke in its combustion, but light, clear, white fumes. Those who have had a good deal of experience with this remedy, tell me that they find the red blotting-paper, of moderate substance, the best. Some blotting or filtering papers appear to have a good deal of wool in them; they are loose, thick, and coarse. They should be particularly avoided, as they yield, on burning, a smoke of a particularly irritating and

offensive kind, with a smell something like that of brown paper smoke, only worse. The nitre-paper, when once made, should be kept in a dry place, and then will not be the worse for any amount of keeping; but if it gets damp it does not burn with sufficient freedom, and should then be dried before using.

"The following is the way in which an asthmatic gentleman tells me he has been accustomed to make paper that answers perfectly well:—'Dissolve four ounces of saltpetre in half a pint of boiling water; pour the liquor into a small waiter, just wide enough to take the paper; then draw it through the liquor, and dry it by the fire; cut it into pieces, about four inches square, and burn one piece in the bed-room on retiring to rest at bed-time.' I have tried this method of preparing the paper myself, and find that it burns perfectly well, and is very efficacious; but I think *two* pieces are not at all too much to burn at once."

In the cases of asthma that have come under our own observation, the treatment that we have adopted for the paroxysm has always been, in the first place, an emetic, for which we prefer the sulphate of zinc, which we have found as efficacious as ipecacuanha, more speedy and less depressing. We dissolve thirty grains in a tumblerful of water, and allow the patient to drink half of it, and to take the remainder in ten or fifteen minutes, if necessary; generally relief is obtained immediately after swallowing the second dose. As soon as the stomach is emptied, and the vomiting has ceased, we give a cupful of strong hot coffee, without milk or sugar, and containing twenty or thirty drops of laudanum; and, at the same time, we direct the nitre paper to be burned in the room. The relief from this treatment is generally prompt and complete. A medical friend, subject to asthma, tells us he prefers mustard as an emetic; we believe it is not very material whether it, zinc, or ipecacuanha be used.

Chapter VIII. treats of the therapeutical influence of locality in asthma. All who know anything of asthma are familiar with the great influence of locality on the disease. Dr. Salter gives many examples of this. On the whole, the air of cities agrees best with asthmatics. Many patients can breathe only in the smokiest and densest parts of smoky towns; others are free from the disease only in high, dry situations, with a clear, bracing atmosphere; while others prefer the seaside, or can only live in comfort on board ship. It seems impossible to lay down any rule as to selecting situations for patients affected with this disease. We have known patients to travel sixty or seventy miles to Dublin of a winter's day, and that before we had railways, to obtain a night's sleep after

a week of suffering; and others, we have known, who suffer more in Dublin than elsewhere. Dr. Salter gives very many very interesting cases, illustrating the effects of locality and the great caprice of the disease. Even the change of a few yards, or moving from the back to the front of a house, will, sometimes, afford relief. But, as a general rule, that suggested by Dr. Salter is, we believe, the best, viz., that air the most opposite to that in which the patient suffers most, is likely to prove the most beneficial.

Often repeated experiments will succeed in discovering a situation where entire freedom from the disease may be secured. Abernethy, in his Lectures, records the case of a man who could only breathe in a room containing the fumes of sulphuric acid, which is even more extraordinary than any of the cases recorded by the author; and Graves mentions, in his Clinical Lectures, having called one winter's day on two asthmatic patients residing in the same street, one of whom had his window open, though suffering much from the cold, lest there should be any smoke; and the other had his room full of smoke from a coal fire, and was in the habit of having the chimney partially stuffed to insure the room being filled with smoke, as nothing else gave him freedom from his asthma.

The remaining chapters are on the dietetic and hygienic treatment of asthma, and are most valuable. It seems scarcely necessary that we should go through the form of recommending this book of Dr. Salter's to our readers, but we do recommend it most sincerely.

PART III.

MEDICAL MISCELLANY.

Case of Hydrophobia. By Allen French, F.R.C.S.I., Surgeon to the Killeroran Dispensary Co. Galway.

On January 16th last, I was called to see a boy named Matthew Farrell, residing in Closhstoher, in the parish of Killian, Co. Galway, aged 21 years, a labourer. It was told me he was suffering from difficulty of breathing, &c. &c. On my visiting him I found him in bed, covered *only* with a coarse sheet, and he was holding the upper part of it close to his neck; I perceived at once that he was in an excited state, and he chiefly complained that "the sweat was smothering him;" he also said that he felt something coming up his throat and taking the breath from him. The saliva was gathering about the fauces, and he was constantly striving to get rid of it by spitting; be screeched and screamed *aloud*, began to toss himself about in the bed, plunge, and kick, so that two men had to prevent him from hitting his head against the wall; he used then to exclaim that he felt it coming on him, and that it would choke him; the fit lasted only a short time; there was a wildness about his look and manner; he spoke as one in great excitement; his skin was moist; pulse extremely quick; pupils dilated; still, he answered every question rationally, and described his feelings accurately; though the day was frosty he could not bear anything over him except the sheet. I asked him how long he was ill, and how he felt it coming on him; he stated that on the night of the 31st of December he was at a wake; that gradually he felt the perspiration coming on, and at last that he thought the crowd of people at the wake were smothering him. I heard that the day after he was at the wake, he was working in the field, and on the following day he was after sheep, and he was heard shouting and screaming through the fields as one out of his mind. Every five minutes he would interrupt me and say: "If you can cure me of the sweat, I will be well;" and then at once he would fall into one of the fits. As I before mentioned, he did not lose consciousness either before or after the fit.

His father, about two years ago, had to be tied and sent to the Lunatic Asylum; he recovered, and was now attending the boy. Although I had his (the father's) case before me, I suspected in this boy hydrophobia. I asked him would he take a little medicine from me; he said no, it would choke him. I told him it might do him good, and he ought to take it; so he said when the fit was over, he would try and take it. I waited until it was over, and then I gave him some of a mixture I had with me (there was some tartar-emetic in it); with a great effort he drank it. He did not appear to be excited by water or fluids; it was the dread of drinking that excited him most; I asked him if the light affected him; he said not; but I was told the fits were more frequent by day than by night. I walked out and asked his mother if at any time she had heard of his having been bitten by either a cat or a dog; she denied having ever heard that he was. I returned and asked himself, he at once stretched out his hand and showed me where his index finger had been bitten by a cat more than twelve months ago, which put its teeth into the bone, but he said he killed the cat in the forge where he was bitten. I left him for about an hour or two; when I returned, he took me by the hand, and said he was better, and he hoped I would cure him. The emetic acted on his stomach, and removed the saliva from his mouth, which gave him great relief; still he had the consciousness of approaching death. He ate a little bread after his stomach was acted on by the medicine, and drank a little, although with great difficulty. The clergyman in attendance said it was a species of madness, and that he was Chaplain to the Institution in Sligo for some time, where he said he had ample opportunity of seeing such cases. In this opinion I did not agree with him, for, from the history of the case, the nature of the fits, his excited manner, the wildness of his appearance, the dread of drink suffocating him, and his being rational on all subjects, as well as retaining consciousness after the fit, I considered there could be no mistake about the nature of the complaint. The poor boy died that night. After one of the fits, he lay down and expired, although a person not acquainted with the disease would suppose he had strength to last for some days. He lived only six days from the first symptoms, and about three days from the time he became excited—the usual course of hydrophobia. During the whole period of the attack he showed no enmity to any one, nor did he offer any one violence, and even used to speak affectionately with his friends between the fits and before his death.

Contributions to the Pathology of Diabetes Mellitus.

By RUD. LEUBUSCHER.

THE following case, observed in my clinique at Jena, presents many points of interest, both on account of the opportunity it afforded for continuing a series of experiments during several months while the

general health was good, and of the results of the post-mortem examination:—

Anna Stein, a girl aged 19, from Gerstungen, was admitted on the 16th of May, 1858. I have within three years had four cases of diabetes under my observation, and the clinical books of the three preceding years record three others, in which the patients all belonged to the female sex, while other physicians still adhere to the opinion that diabetes is chiefly a disease of the male sex. My present patient, a girl of slight development, and still childish form, whose intellectual endowments are of a low order, states that she has for many years suffered from feelings of weariness and great thirst, without being able to remember any preceding more serious illness. Her occupation was tending geese, in which she was frequently exposed to cold.

Examination, on her admission, exhibited a very dry, parchment-like skin, a narrow chest, a dull sound on percussion in the right subclavicular region, puerile respiration in the apex of each lung, hepatic dulness, commencing at the fifth rib, but reaching only to the inferior edge of the false ribs; the left lobe of the liver filled the epigastric region. Great languor and drowsiness, intense thirst, and great appetite, with regular normal action of the bowels.

The quantity of urine, which was of light yellow colour, and neutral reaction, amounted, on an average, to between seven and eight thousand cubic centimètres in twenty-four hours; its specific gravity was 1·030, 1·035–39–44; the quantity of sugar amounted, on an average, to 2 per cent., but also reached 10, and even 12 and 14 per cent.; the proportion of chloride of sodium varied from 0·18 to 0·41 per cent.; that of urea from 0·4 to 1·6 per cent.

Dr. Passauer, at my request, subjected the patient to a series of experiments, to ascertain the effect of different aliments upon the excretion of sugar, urea, and chloride of sodium. These investigations were conducted with the necessary precautions (examination of the urine at different periods of the day, seclusion of the patient, weighing of the food and drink given), and have been, in part, communicated in Dr. Passauer's inaugural dissertation (Berlin). Subsequently the influence of different medicines on the amount of sugar, urea, and common salt excreted, has been studied by another of my pupils, Herr Koch.

I shall, on the present occasion, merely give a brief and comprehensive view of the results of all the experiments.

1. The temperature of the skin was, during the entire period of the patient's stay in hospital, below the normal standard, being generally only 95° F., and, even under the influence of an acute affection, which finally proved fatal, it did not exceed 96° F. The difference in the nature of the food appeared to have less effect on the variations of bodily temperature than the existing temperature of the room.

2. The amount of urine excreted does not correspond to the quantity of drink ingested, but exceeds it many times. This was

particularly striking one day, when six ounces of red wine, three ounces of rectified spirit, and 1000 cubic centimètres of water, were taken, the quantity of urine amounted to only 3300 cubic centimètres—less than usual. But the desire of patients to deceive in general renders this circumstance uncertain.

3. When the food is mixed, and abounds in starchy matter, water being at the same time freely taken, the quantity of chloride of sodium and of urea excreted in twenty-four hours considerably exceeds the normal proportion. Great amount of sugar.

4. A predominance of meat increases the quantity of urea, and diminishes that of sugar, without essentially influencing the amount of common salt.

5. The free use of milk with mixed diet does not produce any change in the quantities of sugar, chloride of sodium, and urea excreted.

6. The ingestion of alcoholic drinks, with predominant protein-food, considerably increases the excretion of sugar; the quantity of urea is diminished; the proportion of chloride of sodium undergoes no change. Dr. Rosenstein[a] has obtained a similar result, but states that he observed that the excretion of sugar becomes relatively less in proportion as the amount of alchohol in the wine increases. In my case the increase of the sugar is the more valuable, on account of the simultaneous administration of nitrogenized food, which usually has the effect of diminishing the quantity of sugar.

In all such experiments a great difficulty exists, which unfortunately cannot be avoided, although it may sometimes have a disturbing influence on the results obtained: I allude to the restraint which it is necessary to exercise over the patients, and which has a tendency to excite uneducated persons to opposition, deception, and evasion of the physician's directions, and in the most favourable case produces in the patient a state of physical tension and excitement, which may easily modify the metamorphosis of tissue.

A second series of experiments was undertaken to ascertain the influence of various medicines. The patient got mixed diet, with plenty of meat, about a pint and a half of good brown beer, but was no longer confined; therefore the quantity of drink taken could not be ascertained with perfect certainty.

The following were the results :—

7. Iron given in the form of lactate, in doses at first of four, and subsequently of six grains, from the middle of November to the middle of December, afforded a mean quantity of sugar, the urea and chloride of sodium remaining the same, and the patient continuing in general good health.

8. Pepsin, in doses of ten grains twice a day, from the middle of December to the beginning of January. The quantity of urine excreted was less, its specific gravity was higher, reaching to 1·044; all the constituents, sugar, urea, and common salt, were both rela-

[a] Virchow's Archiv, Bd. xiii. p. 479.

tively and absolutely increased. The general health was, at the same time, uninterruptedly good.

9. Benzoin, given in daily doses of about six or eight grains, as benzoic acid, benzoate of ammonia, and benzoate of soda, from the middle of January to the middle of February, had no decided effect on the excretion of chloride of sodium and urea; the amount of sugar continued moderate. The principal object, however, in giving the benzoic acid, was to trace its change into hippuric acid. For, as the investigations of Kühne and Hallwachs have established that the formation of hippuric acid takes place in the liver, in consequence of the combination of benzoic acid with the glucin of the glyco-cholic acid, its possible non-occurrence might fairly be taken (although Liebig and Lehmann have found hippuric acid in the urine of diabetic patients, to whom no benzoin had been given), as a proof of a deficient formation of glucin in the liver. The experiments, which were continued in the chemical laboratory by Professor Ludwig, certainly led to the discovery neither of benzoic nor of hippuric acid; but this probably depended on the unsatisfactory methods employed; it had been neglected to neutralize the urine during the evaporation. When, on a subsequent occasion, in another diabetic patient, the urine, during evaporation, was accurately neutralized with milk of lime, then treated with hydrochloric or oxalic acid, repeatedly agitated with ether and spirits of wine, and the residuum, after spontaneous evaporation, covered with boiling water (Hoppe's method), the most distinct crystals of hippuric acid were obtained in repeated experiments, whence it is to be inferred that in diabetes the metamorphosis of benzoic into hippuric acid takes place, as well as under normal conditions.

The general state of the patient during all these experiments, which were continued to the end of March, was satisfactory; the only temporary interruption to health was caused by a furuncle on the nates. The abscess, when opened, contained normal pus, and the blood, which escaped on the incision, was apparently normal. But at the end of March, the patient having suffered violent mental emotions, and having, on the 29th, been exposed to severe cold, was, in the course of the following night, seized with shivering, and vomited once. She complained of severe headach and oppression. A mustard poultice gave only temporary relief. Next morning the skin was cool, 96°·4 Fah., dry; the tongue was dry, and coated with a yellowish fur; the pulse was small, hard, 132; the respirations were 36. In the chest the same phenomena were found as before; posteriorly on both sides, there was dulness from the eighth rib downwards, and indistinct respiration. Above the spine of the right scapula there was bronchial respiration. There was no cough or expectoration. The abdomen was tender on pressure, and was tympanitic. The bowels were torpid. Infusion of rhamnus was given, which produced a pappy motion. The quantity of urine on the 30th of March amounted, in twenty-four hours, to only 3020 cubic centimètres; its specific gravity was 1·020; it contained 3·366

per cent. of sugar; 0·300 per cent. of chloride of sodium; 1·700 per cent. of urea; together with a large amount of albumen, demonstrable both by heat and nitric acid. Infusion of digitalis, made with a scruple of the leaves to four ounces of water, with laurel water; cold applications to the head.

On the 31st of March her head was better; the thoracic physical phenomena were the same. The pulse was very frequent, very small; the respirations were 36, and laboured; the skin was cool, its temperature being about 96° Fah., and was very dry. About a third of the infusion of digitalis had been taken; it was discontinued as vomiting occurred repeatedly in the course of the day; the patient was drowsy. An enema produced a copious, soft evacuation; the abdomen was softer. General sponging with tepid vinegar, internally hydrochloric acid in gruel; after this, too, the patient vomited a chocolate-coloured fluid, on which account the medicine was omitted. Increasing collapse; greater drowsiness on the 1st of April. Death during the night. The urine, which, during the last thirty-six hours, could be only imperfectly collected, again exhibited a large quantity of albumen; its specific gravity was 1·020; it contained 4·06 per cent. of sugar; 0·180 per cent. of chloride of sodium; 1·200 per cent. of urea.

The symptoms under which death took place were chiefly indicative of poisoning; as in other dyscratic conditions the theory suggested itself, that under the favouring influence of an acute local affection (in this instance increase of the pulmonary disease), a metamorphosis specially hostile to the nervous system had occurred in the blood. The rapid increase of the pulse, and its enormous frequency, were striking; which, combined with the diminished temperature of the skin, seemed to point to exalted activity in the domain of the sympathetic respiratory nervous system, with paralysis of the cerebro-spinal, if it is allowed to make such an application in a given case. Other observers (Lomnitz, Rosenstein) have stated, on the contrary, that in intercurrent acute diseases of diabetic patients, the temperature of the body attains much higher degrees than in non-diabetics, while, under ordinary circumstances, it sank, with these authors too, below the normal standard.

The occurrence of vomiting, and the subsequent drowsiness, likewise indicated poisoning, in consequence of a decomposing process in the blood. This assumption was supported by the nature of the urine; and the important change in its constituents during the last few days—namely, its comparatively low specific gravity, the increased quantity of albumen, and the striking diminution of the sugar and augmentation of the urea. Had the formation of sugar been so moderated, or was it merely the excretion of that principle which was diminished, and had the non-excreted portion undergone other metamorphoses? How, then, was the increased amount of urea to be explained, and might the excretion of albumen be considered as the result of renal disease?

The dissection, performed twelve hours after death, certainly re-

vealed important changes and sufficient causes of death, but contributed in only a very limited degree to answer the questions I have proposed. I shall now detail the most important results of the autopsy.

The entire body was still tolerably fat. On opening the skull an emulsion-like fluid, containing red blood-coagula, flowed from the divided vessels, particularly from the longitudinal sinus. On the surface of the brain the large veins, particularly over the right hemisphere, were highly congested, but allowed a whitish fluid to be apparent through them. With this the small vessels were almost wholly filled. While on the left side, the membranes of the brain were easily separated, being raised by a small quantity of fluid exudation, on the right they were more firmly adherent, and the cortical portion of the cerebrum was superficially softened. The substance of the brain, on the whole, was firm, the ventricles and the cavity of the spinal cord were almost devoid of serum. In other respects the brain was healthy. The pericardium contained a small quantity of serum; the heart was small, flabby; still, the left ventricle was slightly hypertrophied; in the cavities, particularly of the right side, was a light red, frothy, sanguineous fluid, with milky and soft coagula, presenting a granular surface. In the apex of the right lung was a tuberculous excavation, of the size of a walnut, surrounded with small firm and soft depositions; the postero-inferior portion of the lung, on both the right and left side, was in a state of flaccid hepatization, with œdema, and emphysematous margins. The abdominal integuments, and the omentum, were tolerably rich in fat. The left lobe of the liver extended into the left hypochondrium; it was 7 inches broad, $1\frac{3}{4}$ thick, $8\frac{3}{4}$ in length; the right was convex in the centre, sharp at the edge; it was 7 inches in breadth, 6 in length, and 3 in thickness. The whole liver weighed four pounds. Its substance was pale; only the larger vessels yielded light-coloured very fluid blood. In the hepatic parenchyma were many insulated portions, marked with a yellowish white colour, and infiltrated with fat. Fluid, dark green bile. The mucous membrane of the stomach, as well as of the greater portion of the small intestine to near the ilio-cæcal valve, was highly hyperemic, studded with capillary extravasations of blood, and covered with a thick mucous coating; after the latter was washed off, the villi of the small intestine appeared much swollen, even to the naked eye; the entire surface seemed as if it were sprinkled with fine flour; the microscope exhibited the villi densely charged with finely granular fat. The mesenteric glands were somewhat enlarged, presented whitish infiltration, but were not essentially altered; the microscope exhibited much fat. The spleen was very small and flabby. The kidneys were enlarged, firm, deficient in blood; the pelves were somewhat dilated.

More accurate examination of the blood exhibited, under the microscope, a large quantity of free fat and white blood-corpuscles. After the coagulable portions were separated by boiling, the pre-

sence of a considerable quantity of sugar was demonstrated in the filtered fluid, both by Trommer's test, and by fermentation. In like manner, the existence of urea was demonstrable in a portion from which the sulphuric and phosphoric acids were previously removed by means of barytes, by precipitation with a solution of nitrate of mercury, and in another evaporated portion the characteristic crystals of nitrate of urea appeared on the addition of nitric acid. Some of the white bloody fluid, which stood in a test-glass above the red portion, on being agitated with ether, was almost completely dissolved. After the evaporation of the ether, cholesterin, margarin, and leucin remained behind. In the decolorized blood, which had an alkaline reaction, free ammonia was not demonstrable. The filtrate of the expressed hepatic fluid contained much sugar.

The foregoing case coincides remarkably with the instances already repeatedly observed, of the existence of milky blood in diabetes, and where, by some unknown process, the metamorphosis of fat, as also of sugar, is impeded[a]. Death took place under the simultaneous increase of the pulmonary affection, and accession of gastritis and enteritis; and it is probable that these two processes, especially the first, the disturbance of respiration, which, at the same time, attacked both lungs, materially promoted and augmented the alteration of the blood. It is probable that the important change in the mass of the blood did not occur until the recent attack, as the opening of an abscess some months previously exhibited no external sign of any particular alteration of the blood; it would have struck us, if it had attained so high a degree as we found on the post-mortem examination; the patient, too, had always felt very well up to the date of her last illness.

But if the changes in the lungs and intestinal mucous membrane found on dissection, promoted the metamorphosis of the blood, they certainly were not its sole cause, but the violent mental emotion and exposure to cold were quite competent to have, of themselves, established the process; indeed, proportionably slight causes are sufficient in dyscratic conditions to produce the most extensive decompositions in the vital fluid.

The nature of the blood also satisfactorily explains the decrease of temperature of the skin and the phenomena of somnolence, under which the patient sank, for the obstruction of the capillaries with fat must have constituted an impediment to the circulation, and to the metamorphosis of tissue. But it must be acknowledged that it is not easy to explain the change of the urine with respect to the albumen and the amount of urea, in reference to which we can form only uncertain conjectures.—*Virchow's Archiv*, Band xviii., Heft 1 and 2, page 119.

[a] Compare Virchow, "Gesammelte Abhandlungen," page 140.

On the Employment of Chloride of Zinc in Diseases of the Skin. By Dr. Veiel, Aulic Councillor, of Canstatt.

Since Hanke in 1841 directed attention to the properties of chloride of zinc, I used it in my hospital, as a caustic, in cases where it was desirable to destroy morbid growths in the connective tissue, or to remove abnormal deposits, as frequently occurs in various forms of lupus. For a long time I employed it only in the treatment of lupus and of allied diseases, as lepra vulgaris, elephantiasis, small circumscribed scirrhosities, &c.; it was not until lately that I made use of it for modifying the vitality of pus-secreting surfaces in ulcers on the feet of long standing, in chronic eczema, in sycosis, or for the destruction of funguses, as in pityriasis versicolor, favus, &c.

In the Institution the chloride is employed in three forms: the spirituous solution, the watery solution, and in the solid state as pencils or cylinders. The first consists of equal parts of rectified spirit and chloride of zinc; the second of ten parts of chloride, ten of hydrochloric acid, and 500 of water; the third is prepared by fusing the chloride and pouring it into moulds, as in the preparation of caustic potash. I designate these three forms: spiritus, liquor, and lapis zinci chlorati.

The lapis I select when the object is to penetrate to the greatest possible depth for the destruction of hypertrophic deposits, as frequently occurs in inveterate cases of hypertrophic and tuberculous lupus, in which the agent is employed precisely in the mode recommended by Langenbeck in the use of caustic potash.

I made use of the lapis in my hospital with the best possible result in thirteen exquisite cases of hypertrophic lupus, six times on the upper lip, four times on the cheek, twice on the ear, and once on the ala nasi.

The following is the mode of proceeding:—Where scabs or thick scales are present, which have already destroyed the epidermis, cataplasms are employed for their removal; but where the epidermis is still intact, it is separated by blistering plaster or water of caustic ammonia. The lapis, placed in a quill, and pointed[a], is now worked into the hypertrophic or tuberculous tissue, to a distance of about two or three lines, until, when the surface is large, the pencil has penetrated all the excrescences in various directions. Immediately after this operation, in which the pencil sometimes penetrates with remarkable ease to a considerable depth, but at others enters with difficulty, and only superficially, there flows from the honeycomb perforated surface at one time dark, at another light-coloured blood (which is removed by means of a sponge), and soon after a clearer serum, which, in the course of a few hours, hardens to a smooth and firmly-adherent scab. This, partly in consequence of the swelling of the surrounding tissues, partly in consequence of the loss of

[a] As the chloride of zinc in the solid form is extremely deliquescent, it must be kept for use in a well-closed glass vessel.

substance, already presents a rather depressed appearance. On the third or fourth day thin pus forms at the margin of the scab, and is removed by acupuncture, which generally greatly diminishes the tension. On from the sixth to the eighth day, the scab loosens at the edges, whereupon it is completely removed by means of poultices, which are to be continued for several days. The application of the lapis to the tubercles and ridge-like striæ is now repeated, especially in the more prominent parts, until the hypertrophic tissues are destroyed, proceeding as at the first. It is, in general, seldom necessary to apply the lapis more than three times; it was only in one case of an hypertrophic cheek, which was destroyed from the eyelid to the edge of the jaw, and in the latter place was, in its entire breadth, almost as thick as the finger, that I was obliged to use it much more frequently. When the great wound is at length free from all puffy elevations, and has been brought down to a level with the surrounding healthy parts, it is poulticed for several days, lightly smeared every three or four days with spiritus zinc. chlor.; and, subsequently, when the edges have begun to contract, with the liquor, until a perfect cure is obtained, which seldom requires more than three or four months.

In lupus exfoliativus and exulcerans, without hypertrophic infiltrations, the use of the spirit continued to the complete destruction of the fully, or half-developed, or already softened tubercles is sufficient, after which the liquor is likewise employed until the cure is effected. In this case the morbid surface, deprived of its epidermis by a blister, is lightly touched with a pencil dipped in the spirit. This application is attended with violent pain and profuse secretion of albuminous serum, which partly flows off and partly combines with the zinc to form an eschar of albuminate of zinc. The eschar is at first firmly adherent, but after three or four days it separates, with profuse secretion of watery pus. The interval between the first and second cauterization is shorter with the spirit than with the lapis, about three or four days; in this instance, too, the separation of the eschar by the suppuration must determine the time for further cauterization. As to the liquor, which is intended only to hasten the process of healing, it will be sufficient to use it every five or six days.

The lupus superficialis seu erythematocus of Cazenave and Hebra —I should like to call it the red, shagreen-like lupus of the face— requires for its treatment the spirit diluted with the liquor, as in it much more superficial layers of the integuments are affected, and the subcutaneous areolar tissue is rarely implicated.

Hence the indication for the employment of the three forms of the chloride of zinc is evident: the lapis is to be used wherever hypertrophic tissues are to be removed; the spirit where the object is to destroy morbid subcutaneous tissues and degenerated and more superficial layers of integument; the liquor, where it is desirable to promote the cure by means of an astringent and stimulating application, and to secure the formation of a firm cicatrix.

Besides lupus, chloride of zinc is consequently useful in a great number of cutaneous diseases, which I shall now briefly mention.

In obstinate eczema occurring at the boundary between mucous membrane and cuticle, as on the eyelids, the lips, the labia pudendi, the anus, smearing with the spirit is highly serviceable. In the case of the eyelids, the hairs or ciliæ must first be removed. Here one cauterization was usually sufficient; while on the mouth and labia pudendi it must be repeated. When the delicate scab was separated, the eczema is generally cured. In eczema solare and impetiginoides daily smearing with the liquor is often the only mode when all other means have failed, of effecting a cure. In eczma of the tongue, too, gaping fissures of the nipples and scrotum, of the palms of the hands and points of the fingers (tylosis), the quick of the nails, &c., the mixture of the spirit with the liquor, in the proportion of one part to ten, has often alone effected a cure, particularly in the quick of the nail, which often forms an unconquerable source of vesicular eruptions. This mixture has also done good service in warty erosions of the tonsils and back of the pharynx, where daily pencillings are necessary.

In psoriasis some remains after treatment with tar, which often continue as large as peas on the elbows, back, or upper part of the thigh, are particularly easy destroyed with the spirit, the scabs being first scraped off with a knife. There is also a palmar psoriasis attended with painful corn-like thickenings, which yield to no other remedy but the lapis, after they have been raised out of their bed by means of a blister.

In sycosis and favus the liquor is very useful, after the hairs of the beard, or head, have been removed. In these affections it acts partly by resolving the swelling and infiltration of the follicle, and partly, as in favus, by arresting the formation of fungi. The same is true of some forms of acne; I also employ with good effect, after the resolution of the tubercles, the combination of sulphur with alcohol, recommended by Hebra.

A great number of warty, circumscribed scirrhosities of the nose, cheek, and lips have been very successfully destroyed with the spirit.

In chronic ulcers of the feet, especially when they have callous edges and a false membrane at the bottom, which has become an independent secreting surface; the destruction of this membrane by the spirit is of great use, particularly when the callous edges are at the same time removed by the knife.

In cysts, too, glandular swellings which are constantly suppurating, and fistulous passages, only one or two applications of the spirit are required to destroy the secreting membrane.

In syphilitic secondary ulcers (syphilides ulcerosa) the mildest treatment is certainly the best, and caustics are not applicable; but in condylomata, in soft warts, mollusca, the cauterization of the roots, after the protuberances have been removed with the knife, is of great value. The employment of the liquor was also successful in sebarrhœa, burns, and chilblains.

It now remains for me to point out the advantages presented by chloride of zinc in the treatment of cutaneous diseases, as contrasted with some other caustics in use.

Its principal advantages consist in—

1. That it enters into combination with all elements with which it comes in contact, especially with protein and albuminous matters, while the compounds so formed in their turn produce a penetrating, cauterizing irritation, whereby the parts in the neighbourhood of the eschar contract, diminishing the wound and approximating the edges of the sound part.

2. That this irritation produces a more rapid formation of pus and separation of the eschar, causing the healing process to proceed much more quickly, the surfaces of the wound to form more rapidly, and to exhibit better granulations.

3. That the cicatrization is better, in consequence of the peculiar contraction and uniform destruction of the parts.

4. That the pain, though considerable, lasts only a proportionably short time, and can, consequently, be very much moderated by the use of chloroform.

In these qualities the chloride of zinc excels,

a. The acids, which produce rather a coagulation of the albuminous matters, and form a leathery eschar, which does not penetrate very deeply, and separates only slowly and with difficulty, while the shrivelling of the capillary vessels has a weakening effect on the healing process.

b. Caustic potash, which produces a saponification of the soft parts, incapable of being accurately limited, readily corroding the neighbouring tissues by the secretions to which it gives rise, and likewise creating eschars difficult of separation, which leave neither healthy suppuration nor vigorous granulations.

c. Lapis infernalis, which acts much more superficially, and produces more tedious separation of the destroyed parts, thus giving rise to more persistent pain and less perfect cicatrices.

d. The preparations of iodine (Richter's iodide of glycerin and the preparations of iodide of mercury) likewise penetrate more slowly, create greater reaction of the healthy surrounding parts, are, consequently, also more painful, and, on account of the greater or less amount of iodine they contain, are more uncertain.

With chloride of gold, chloride of bromine, Landolfi's paste, Petrequin's caustic solution of gold in aqua regia, &c., I have made no comparative experiments; nor have I made more use of the pulvis cosmi, or the other preparations of arsenic, which I have avoided on account of their danger and uncertainty, so long as I found the chloride of zinc to satisfactorily replace the other caustics.

I close this short paper with an expression of my wish that chloride of zinc may occupy the same important place in the treatment of cutaneous diseases, that I and others procured twenty-five years ago for green or Dutch soap, as an indispensable agent in the cure of these affections.—*Zeitschrift der k. k. Gesellschaft der Aerzte zu Wien*, 20 Feb., 1860, page 113.

On the Diseases of Printers. By DR. VAN HOLSBEEK.

DR. VAN HOLSBEEK having enumerated the diseases resulting from overwork, from intemperance, want of cleanliness, vicious habits, protracted watching, &c., proceeds to speak of the morbid affections more specially belonging to the printer's art. Fissures of the lips, of varying depths, are of frequent occurrence; at other times tumours are developed on the inner surface of the same parts, which are nothing else than follicles whose excretory ducts are closed. These tumours sometimes inflame, become highly painful, rapidly ulcerate, and assume a cancerous appearance. Such affections of the lips are owing to the habit some compositors have of putting into their mouth the types still moist with the fluid which has served to wash them. Dyspepsia is frequent, as is diarrhœa; the latter is, however, of a transitory and mild nature. Among the most common affections are those of the respiratory passages, of which laryngitis and bronchitis are the principal; pleuritis is rare; pleuropneumonia is frequent and severe. These diseases are favoured by the curved position which the printers are obliged to maintain during their work, particularly when they correct on the forms, and still more by the night-work, by gas-light, by the dust and emanations in places often confined and badly ventilated. Nearly twenty-five per cent. of printers die of tuberculosis, either hereditary or acquired. Diseases of the heart prevail among the pressmen; hemorrhoids are rare; varices and varicose ulcers are of frequent occurrence; the compositors who correct on the form frequently suffer from cerebral congestions and hemorrhage. Among nervous diseases we observe tremor of the hands, against which the author successfully employs the electric current. Saturnine colic and paralysis are rarer than formerly, an improvement due principally to the difference in the composition of the materials of which the type is made, to the precaution of cleaning it from dust, as well as frequently rubbing the boxes which contain it: lastly, to the care of the workmen, who no longer put the letters in their mouth. Hernia is common, particularly among the pressmen; in them we occasionally observe distortion of the joints of the fingers. Fissures and callosities form on the thumb and index finger of the right hand, on account of the roughness of the characters, particularly if they are new and damp with the matters with which they are polished; moreover, in consequence of the habits the printers have of washing themselves with alkaline water or bad soap. Amblyopia and myopia, so very prevalent among typographists, terminate the sketch drawn by the author of the diseases of this interesting class of artisans, with whom we are in daily contact, and whose intelligence and diligence we have constant reason to admire.—*Lo Sperimentale*, December, 1859, p. 560.

On the Resorption of Pleuritic Exudations. By Professor Skoda.

The resorption of pleuritic exudations frequently takes place very slowly, because the capillary vessels in the sub-pleural connective tissue are obliterated. This may be the result of shrivelling and disappearance of the connective tissue newly formed from the exudation, as then, in consequence of the arrest of the metamorphosis of tissue between the blood and the exudation, endosmose and exosmose cannot duly take place. It is not until after the lapse of months or years, when the fluid portion of the exudation has penetrated through the false membranes investing the pleura, that its resorption occurs. In the first case, internal medicines can, of course, avail nothing, as in them we possess no means of exciting the re-formation of vessels. What has been said explains the action of iodine injected in exudations, inasmuch as, by exciting inflammation, it causes the development of new vessels, and so induces the resorption of the effusion. But this view does not, perhaps, encourage us to the frequent employment of thoracentesis and subsequent injection of iodine; for this proceeding is by no means so safe as the corresponding operation for hydrocele. But, apart from that consideration, the injection of iodine or nitrate of silver into the pleural sac can answer no useful purpose; as, on the one hand, in consequence of the presence of the albuminous exudation, the caustic influence of these agents cannot reach the pleural sac, particularly as by the chemical combination which these substances form with the effusion, their power is altered and exhausted, so that the fluid must in the first instance be pumped out, which violent and sudden evacuation may be attended with evil consequences. But, on the other hand, in effusions of long standing, which have already attained to partial organization and shrivelling of the product of inflammation, the injection will be inefficacious, because the lung can now no longer fill the space previously occupied by the fluid exudation, especially as the investing false membranes must first be broken up by the lungs, which is not conceivable. But even if this should take place, a sudden evacuation could be followed by no favourable result, because necessarily there must be ruptures of the pleuritic adhesions and bursting of the compressed pulmonary parenchyma. Therefore, in a pleuritic effusion of long standing, it is only exceptionally that puncture is admissible, when the exudation is so considerable as to depress the diaphragm, to displace the mediastinum, and so to compress the lung that danger of suffocation supervenes. But how can the resorption of pleuritic exudations be induced? Experience shows that all those means which lower the pressure of the blood or augment the secretions, and therefore promote the separation of water from the blood, effect a diminution of the fluid effusion. Accordingly, venesections and diuretics may be indicated in cases of effusion; but these effects also occur spontaneously. In chronic exudations, which are already organized, such means will even be rather injurious, and the indication will be to

employ remedies capable of dissolving solid exudations. Such remedies are iodine and mercury. The cautious employment of these means may therefore be adopted, and they are particularly suitable for external application. Professor Skoda has for some years employed these means experimentally, and has often seen pleuritic exudations rapidly diminish after the use of mercurial ointment, iodine ointments, iodide of glycerin, and black oxide of copper in the form of ointment. It is self-evident that in all chronic pleuritic effusions the diet must be good, in order as much as possible to counteract their injurious effects upon the system at large.—*Vierteljahrschrift für die praktische Heilkunde*, 1860, Band lxv. *Analekten*, p. 53.

A Contribution to the Chemistry of the Suprarenal Capsules[a].

By Dr. SELIGSOHN.

THE following experiments were undertaken in the Laboratory of the Pathological Institute, at Berlin, with a view to establish the discovery by Vulpian and Cloëz (Comptes Rendus, September, 1857, p. 340), of taurocholic and hippuric acids in the suprarenal capsules. The method pointed out by these observers was adopted in my investigations.

A pound of the suprarenal capsules of the ox, having been carefully cleaned and comminuted, was macerated for several days with diluted alcohol, after which the alcoholic solution was filtered and evaporated. The addition of water to the completely evaporated mass caused the separation of fatty matters. The watery solution was evaporated to the consistence of a syrup, and absolute alcohol was added. The residuum thus obtained was dissolved in water to be tested for leucin; the precipitate produced in the red-coloured solution, by the addition of basic acetate of lead, was separated by filtration, and the excess of lead in the filtrate was removed by sulphuretted hydrogen. In the fluid freed by filtration from sulphuret of lead, and evaporated to the consistence of a syrup, only cubic crystals (Na Cl) were observed on microscopic examination, but no leucin was discovered. The alcoholic solution filtered from the supposed residuum of leucin was evaporated to the consistence of a thick brown syrup, which, when dissolved in water, manifested an acid reaction. This solution, mixed with an excess of hydrated oxide of lead (to the removal of the acid reaction), was anew evaporated to dryness; the dry mass was then boiled with 65 per cent. of alcohol. From the warm, filtered alcoholic solution, which was of a dark brown colour, the excess of lead was removed by means of sulphuretted hydrogen. From the yellow fluid separated by filtration from the sulphuret of lead, crystals were deposited after long repose in the cold, which exhibited the following

[a] Extract from an inaugural dissertation: "De pigmentis pathologicis ac morbo Addisoni adjecta chemia glandularum suprarenalium." Berolini: 1858.

behaviour towards reagents. They dissolved readily in ether, and, on evaporation of the menstruum, separated partly in the form of fine needles, partly as scales. They dissolved with difficulty in cold water, which, however, exhibited a distinctly acid reaction. Under the microscope the crystals presented the form of fissured rhomboidal tables; some of them having been warmed in a test-glass with concentrated hydrochloric acid, the crystalline coating which formed on the sides of the glass exhibited the same form as the original crystals.

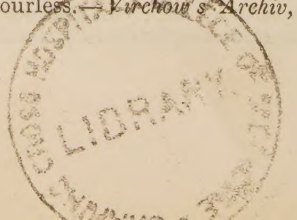
Their microscopical and chemical behaviour, as well as the formation of the sublimate, put it beyond a doubt that crystals of benzoic acid had in this case separated, while the properties of the crystals obtained by Vulpian and Cloëz, by a similar mode of proceeding, agree essentially with those of hippuric acid.

To the fluid separated from the crystals, an excess of powdered chalk was added, to prevent the possibility of decomposition (on evaporation in the water bath before the addition of carbonate of lime, the fluid became turbid, while fumes of sulphuretted hydrogen at the same time escaped), and the former was thereupon evaporated to dryness in the water bath. The dry residuum was strongly warmed with diluted alcohol, the alcoholic filtrate again evaporated, and then heated with concentrated hydrochloric acid, in order to resolve any taurocholic acid, which might have been present, into taurin and choloidinic acid—the crystalline mass thus obtained dissolved with the formation of a residuum apparently agreeing with choloidinic acid; which, however, on the application of Pettenkofer's test, did not exhibit the characteristic coloration. But in the solution the presence of sulphur was clearly demonstrated; moreover, the characteristic crystals of taurin separated on evaporating the solution in the air.

The incinerated constituents of the residuum of the suprarenal capsules obtained after maceration in alcohol, in which no uric acid was discovered, were—

1. Constituents soluble in water:—
   Phosphate of Potash.
   ,, ,, Soda.
   ,, ,, Lime.
2. Constituents soluble in hydrochloric acid:—
   Phosphate of Iron.
   ,, ,, Lime.
   ,, ,, Magnesia.

With reference to the colour-reaction of the suprarenal capsules, I would, in conclusion, observe, that after the application of very dilute hydrochloric acid to their substance, the filtered clear solution assumes a beautiful red colour on the addition of ammonia in excess; after the evaporation of the excess of ammonia the solution becomes again colourless.—*Virchow's Archiv*, Band xviii., 3 and 4 Heft, page 355.



Mr. Butcher on Amputation at the Knee.